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THE AUTOMOBILE MAGAZINE

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LOS ANGELES

THE MODERN EXCELSIOR

THE
AUTOMOBILE MAGAZINE

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Is Benzene the Future Fuel?

By Prof. James R. Hunsicker

NOW that the American automobile manufacturers have embarked in the search for a substitute for the use of gasolene in automobiles, why should they confine their efforts in this direction entirely to aiding those who preach the gospel of alcohol? It may, of course, be that alcohol is the most likely, or even the only possible substitute for gasolene, but how can this be better discovered than by first trying out all other claimants for consideration? Remembering that the greatest and the surest of all government revenue payers is alcohol in its various forms, and remembering also that governments have a very pronounced dislike for abandoning sure sources of revenue for problematical ones, let us see if there is no other possible substitute for gasolene than this loudly proclaimed, but yet to be proven, successor, alcohol.

When the chemist to-day sets out in search of some new adulterant, dye, color, perfume, sweet, or almost anything else of a similar nature, he is inclined always to consider the claims of coal tar, it being entitled to first honors as the most likely source from which to obtain what he seeks, since probably nothing else has become so famous for the variety, usefulness and value of its by-products as what was formerly a much despised by-product itself—coal tar.

When this tar is distilled and treated in various ways, a light spirit is finally won, which forms a colorless, limpid, volatile liquid very much like gasolene in all but odor and chemical composition. For reasons which I will note later on, it is desirable to explain the chemical composition of the coal-tar spirit in some detail. In its unrefined state, when it is called "crude naphtha," it still retains some color, and it is a mixture of a limited number of hydrocarbons, which, practically speaking, differ only in the degree of their volatility. This "crude naphtha" can be, and for certain commercial purposes already is, further refined until each of its constituents is entirely separated from the others—an extent of rectification which, except in isolated instances, is not known in the case of any of the petroleum products. Finally, there are obtained from the crude naphtha, pure benzene, pure toluene, and sometimes pure xylene (three substances having this name exist, but they may be deemed identical here).

It is most important not to confuse the word benzene with benzine—for the latter is a petroleum product like gasolene—and to realize that benzene is a chemical individual with one fixed boiling point, whereas benzine (like gasolene) is a mixture which begins to boil at a temperature far below that at which it all passes over.

Pure benzene is a perfectly colorless liquid which boils at 81° C. (178° F.), and has a specific gravity of 0.884; pure toluene boils at 111° C. (232° F.), and has a gravity of 0.871. Gasolene, which has a density of 0.680, boils between 120° and 250° F. or thereabouts; 0.700 gasolene boils between 130° and 350° F. Petroleum benzine usually has a specific gravity of 0.730 to 0.750, and boils between 248° and 302° F.

The fact that the densities of the coal-tar spirits are higher than those of the petroleum spirits means nothing; they belong to different classes of chemical substances, and are, therefore, not comparable. Among petroleum spirits a liquid becomes less volatile as it is denser; among coal-tar spirits this rule does not apply. The only outcome of the greater density of the tar hydrocarbons is that the purchaser gets 8¾ pounds of benzene for his gallon, as against 6¾ to 7 pounds of gasolene. Pure benzene is sold in quantities of a thousand gallons at a time, being used for increasing the illuminating power of coal gas, and for making aniline dyes. Pure toluene (also the xylenes) is sold in similar quantities, and is used in the manufacture of other dyes and of saccharine. Pure benzene is often called benzol or benzole; toluene, tolnol or tolnole. I have avoided these names for reasons which will immediately appear.

The rectification of coal-tar naphtha is frequently stopped before the point at which the various hydrocarbons are wholly separated from one another; products being left which contain some pure benzene, some pure toluene, and some xylene. According to the proportion by volume which passes over at 100° C. when distilled in certain specified ways, these liquids are termed "90 per cent.," "50 per cent." and "30 per cent." "benzol." The expressions just quoted are often contracted to "90's" or "nineties" benzol, etc. "Benzol," therefore is, strictly speaking, imperfectly rectified benzene, and it were advantageous that the term should always be used in that sense.

Again, however, a word of caution must be given: "90 per cent." alcohol means a liquid containing 90 per cent. of true spirit and 10 per cent. of other material, which is nearly all water and, therefore, useless; "90's" benzol, on the other hand, is a liquid which contains, say, 70 per cent. of true benzene, with 30 per cent. of other substances that are of practically equal value to everybody except the dye maker. Although the boiling point of toluene is higher than that of benzene, the liquids are essentially of equal volatility; and it may be said that pure benzene, pure toluene and 90's benzol should be of equally good behavior in the carbureter of an engine.

It is now necessary to consider what amount of work should be done by the explosion of benzene vapor. The figures are given herewith, those in parentheses referring to pure toluene, and their mean, when it is worth taking, represents approximately the properties of 90's benzol. The heat of combustion is 780 (936) large calories. Per one kilo this is 10,000 (10,180). One gallon weighs 4.01 (3.95) kilos, and therefore the combustion of one gallon should yield 40,100 (40,200) large calories. One gallon of 0.69 gasolene gives 34,400 calories; one kilo, 11,000 calories. One kilo of picric acid, on explosion, yields 2,919 large calories when the water formed does not condense. Gasolene is thus a slightly more concentrated fuel per unit of weight, but benzol is considerably more concentrated per unit of measure. A certain tank, accordingly, filled with benzol, ought to hold the material for running a car further, but the charge would weigh

CARRYALL COACHES IN TIMES SQUARE

more. By theory, the consumption of benzene per one horse power should be 0.0645 (0.0635) kilo; the corresponding figures for other fuels are 0.0535 kilo for acetylene, 0.0587 for petrol, and 0.1073 for alcohol. Benzene contains 92.3 (91.3) per cent. by weight of carbon in its composition; gasolene contains 83 or 84 per cent.; acetylene contains 92.3 per cent. of carbon, for it is identical with benzene in this respect; alcohol contains about 52 per cent. Since the air contains 21 per cent. by volume of oxygen, the smallest quantity of air needed to effect perfect combustion or explosion of one volume of these various gaseous or vaporized fuels is: For acteylene, 11.9 vols.; alcohol, 14.3 vols.; benzene, 35.7 vols.; gasolene, from 38.1 to 52.4 or more. The heavier and less volatile any sample of gasolene is, the more air it needs to consume it; and since the more volatile portions of a sample tend to be volatized first, the proportion between vapor and air needs constant attention as the stock diminishes. A tank full of pure benzene, pure toluene, or good 90's benzol would retain equal volatility to its last drop, and the proportion of air would remain equally constant.

I have already stated that no exhaustive research upon the practical efficiency of benzol as a fuel appears to have been carried out. So far as I have been able to ascertain, the only work in this direction was done a few years back by Goslich, who studied the effect of adding increasing quantities of benzol to alcohol in a Körting spirit motor. He used a spirit containing 86 per cent. by weight of alcohol, and obtained the most favorable results by adding to it 20 per cent. by weight of benzol. With alcohol alone he found the consumption per brake horse-power hour to be 0.42 kilo; with the same spirit mixed with 20 per cent. of benzol the consumption was 0.37 kilo of alcohol, plus 0.075 kilo of benzol.

To see what this means a disgression must be made. In the course of some former articles upon the various fuels which can be employed in explosion engines, I gave the efficiency of alcohol as 17.8 per cent. This figure was taken partly because it had been obtained in a well-known official laboratory on the

Continent, and partly because it enabled a fair comparison to be drawn between the value of alcohol and that of acetylene, which was then more particularly under consideration. It is, however, much lower than the value elsewhere recorded. Some Austrian trials of an 8 H. P. engine conducted with 90 per cent. alcohol, having a calorific value of 4,900 per liter or 5,960 per kilo, show a consumption of 0.3735 kilo per horse power hour, which, allowing for the small foreign horse power, works out to an efficiency of 28.5 per cent. Other tests by Arachequesne on similar 90 per cent. spirit, which should have had the same calorific value, give an efficiency of 30.9 per cent.; and if we assumed a pro rata calorific value for Goslich's spirit—i. e., 4,680 calories per liter or 5,620 per kilo—his efficiency becomes 27 per cent. for alcohol only. Now, Goslich makes 0.05 kilo of his alcohol to be equal to 0.075 kilo of benzol; whence, if 0.42 kilo of alcohol yielded him one horse power hour, 0.63 kilo of benzol alone should have done the same. This brings the efficiency of benzol to 10.1 per cent., as against, say, 29 per cent. for alcohol, 23 per cent. for acetylene, and 14.7 per cent. for gasolene. Such a value for benzol, however, must not be relied upon, because there is reason to imagine that the benzol was unfavorably treated in the engine Goslich used. Being a spirit motor, it should have been designed to mix one volume of vaporized alcohol with not much more than 14.3 volumes of air; but the benzene required 35.7 parts of air to consume it perfectly.

The reason why the efficiency of gasolene is so low has not been properly explained, unless it depends on the indefinite nature of the mixture which constitutes that liquid, and which makes the necessary proportion of air to carry from time to time. If this may account for the poor show made by gasolene, we may expect benzol, properly burnt, to exhibit an efficiency equal to acetylene—i. e., 23 per cent.—because the two substances have the same percentage composition.

If, for lack of data, I assume that an economical degree of efficiency could be obtained from benzol, it is desirable to consider how it would rank as an everyday fuel in comparison with gasolene. By virtue of its composition, it would be more likely to deposit carbon in the cylinder. Nevertheless, pure acetylene can be consumed without this trouble, and, therefore, it should be possible to avoid dissociation, or a serious amount of imperfect combustion in the case of benzol. At the worst, the benzol might be diluted with the necessary quantity of gasolene; for this should make a mixture having similar advantages over pure benzol that carburetted acetylene has over pure acetylene as a motor fuel.

Benzol would be safer to handle, because its "lower explosive limit" is higher—that is to say, more must be volatilized into a confined space to render the air explosive in presence of a light. If imperfectly consumed, as some of it must always be in a portable engine, the products from benzol would probably have a less offensive odor than those from gasolene. It would be absolutely free from any trace of oily matter. It would vaporize more smoothly and equally than gasolene, because, even if not a pure chemical substance, it would exhibit essentially a uniform degree of volatility to its last drop. Really pure benzene would, however, have the defect of freezing or solidifying at 32 deg. F., and of not melting again till the temperature rose to 42 deg. F.; but this trouble and source of danger would not exist with 90's benzol or toluene.

Pure benzene flashes below its freezing point—say at 18 deg. F.; 90's benzol at 15 deg. to 25 deg. F.; pure toluene at 41 deg. to 45 deg. F.; xylene at 70

deg. F. But there are numerous spirits made from coal tar, very similar in character to those described, which do not flash till the critical point is passed, and which, therefore, might be legally dealt with like kerosene lamp-oil. These also can be, or are, so refined as to contain very little (or no) matter of an oily nature—i. e., they distil entirely below a certain temperature.

There are two or more varieties of "solvent naphtha" which have flash-points of about 82 deg. and 100 deg. F. respectively, and of which 90 per cent. is volatile and 320 deg. and 347 deg. F. They are a good deal more volatile than their boiling points make them to appear, and if they would vaporize without requiring much heat they ought to be well worth investigating on the part of car owners. They would contain rather less carbon than pure benzene, and should, therefore, be less prone to deposit soot in the cylinder. If they proved of any value, the tar distillers could easily prepare a spirit of any desired range of boiling points, so as to exhibit the maximum possible degree of volatility compatible with a flash-point exceeding 73 deg. F.; and I believe they could do so without seriously affecting the present prices of such products.

It is greatly to be desired, therefore, that American automobile manufacturers and all others interested in finding a substitute for gasolene should see that experiments are carried out in the direction above indicated at an early opportunity; for should the employment of such high-boiling tar hydrocarbons prove feasible, the owners of motor cars would not only have the personal advantage of being freed from the control of the Standard Oil Co., but they would be creating a home market for the native product of a native raw material which is now largely exported to Germany. Even if these heavier spirits should prove unsuited to the purpose in view, there remain the benzols, which are now made into dyes in Germany and sold here. If they were used in place of gasolene the consumer would be acting in a way highly to his profit if nothing else.

How to Improvise a Washer

A washer can be improvised out of a number of things—a piece of sheet-iron, a metal button, an old nut, if a thick washer is wanted; with a piece of wire of suitable thickness a ring can be easily and rapidly made, which will be found to fulfil the purpose, besides being a simple operation for any one.

The Winning of Martha

From the French of Emile Urbel

WHY had Martha de Lizeuil married that great, coarse Stéphin? Why had so much feminine grace and refinement united itself to so much masculine ugliness? That is what no one could explain precisely when that very Parisian event occurred which made that delightful young girl Martha, the much courted and admired, the lawful wife of Robert Stéphin, the tremendously rich banker of Drouot street.

Of course, the gossips started the usual tales abounding in petty ill-nature and scandal; they did not hesitate to say that Martha, to save her father, who was hopelessly in debt to Stéphin, had sought the prize which fell to her in the shape of a husband, stout, coarse, with hideous features, but comfortably padded with bank notes. Finally, some of Martha's intimate friends had declared that the charming girl merely executed the will of her parents, whose choice was inspired rather by the first alarm aroused in the bosom of a family which was no longer fortunate on the Bourse than from the necessity of securing the happiness of an only daughter.

Martha cherished a very strong affection for her father, and M. Stéphin was rich! What other reason could have led to this union of two beings so ill-fitted to understand, sympathize with and love one another? However, no more than three years after her marriage Martha de Lizeuil sometimes found herself bitterly regretting the sacrifice which she had imposed on herself. Her crushed and weary heart would start violently at the perspective facing her of a life always the same, eternally cruel, horribly dominated by that tyrant, Stéphin, for such he had proved to be. Indeed, after a month of marriage he no longer made the least effort to hide what was low, cowardly and contemptible in him.

A petty employee of low origin, who, through servility, cringing, and, possibly through equivocal means, had reached a most enviable position, he had merely disguised for a time the vile sentiments which filled his mind. Martha had had to endure the tyranny of this man whom she never loved and whom she now detested with all the cordiality of the feebler being. Shut up at Maufray in an old châuteau belonging to the banker, never leaving it except to come to Paris each year for a hurried visit of a few days, Martha never complained to her own people of the horrible existence which she was forced to lead; her family were ignorant of her bondage, for she never cared to disturb the comfort of others.

The poor, forlorn creature had still one chance in her unhappiness. The banker, whose business often detained him in Paris, made only fleeting visits to Maufray. The beautiful exile had not to suffer every day from the insolence of her husband, from his brutality, and, above all, from the strict surveillance which he maintained over his wife as if to justify the feelings of fierce jealousy which urged him to banish her from the world and its temptations. At first, in-

deed, dreading solitude, dismayed by the monotony of exile and overwhelmed by the sadness of the hours, she had almost regretted Robert Stéphin's absence. She would have preferred to hear him grumble, throw out stinging remarks, make coarse menaces and to see him live his disgusting life; she would have preferred those days of slavery to these hours of isolation, to these lonely evenings in which she felt more than ever alone, infinitely alone.

But a day came when she wished that the absences might be more frequent; when she had but one thought, one desire, to see her husband remaining far away in Paris, and quite alone, be able during long days and long hours to enjoy a reality less hard, lighted by sun and hope.

It happened that in spite of her husband's wish, and although she went out little herself, Martha had succeeded in making some agreeable acquaintances in the neighborhood and these seemed disposed to welcome, pity and console her.

At the house of one of these friends she had met Armand de Souvestre, a type of country gentleman of elegant manners, great distinction, a happy smile and a sincere heart.

Young and a bachelor, he led near Maufray a life which combined the charm of the country with the luxury of the city. He was an ardent sportsman and automobiling had in him a passionate recruit, and when he passed along the duty roads at full speed in his giant machine it could be seen with what delight he gave himself up entirely to violent exercise.

Presently he fell in love. Martha had fascinated him by her exquisite charm, augmented by a little air of weariness, which to him was captivating. He was interested in her and questioned their mutual friends about her. They told him what they knew of her husband's tyranny and he pitied and loved her still more.

Chance did the rest. One day Armand, rushing along a road near Maufray saw Martha wandering about, alone and sad. He asked her to go along with him for a few miles. She was tempted and accepted. They went far away towards scenes unfamiliar to her. Then they stopped at a modest inn and there in those primitive surroundings these two, intoxicated by the speed at which they had come, confessed openly what they had felt in secret.

She had thought only of him since their first meeting; she had felt that he would change her whole life and make it less bitter or still more sad. She allowed herself to speak of her disgust, her weariness and intense regrets. And he understood the utter loneliness of this poor, this abandoned little creature; pitied her with all the force of a young, strong and loyal love. That never-to-be-forgotten day had exquisite morrows. Each day that the banker was absent the motor car bore them swiftly over the long roads which stretched far away in every direction. In the whirlwind which bore them along they thought only of the joy in living in the company of each other.

But one day an anonymous letter, the contemptible work of a peasant or gamekeeper, was sent to Paris, warning the husband of what was taking place. Under such a stroke Robert Stéphin felt an ungovernable rage take possession of him. Torn by mad jealousy, always sharp in the heart of this man, he hastened to Maufray, and without going to the château, posted himself near the crossroads where the automobile would have to pass. The letter had been precise, giving the hour and the place in which he might be convinced. Stéphin was convinced. He saw the big car pass

BIRDS OF A DIFFERENT FEATHER

bearing along in its rapid course the two lovers leaning against each other.

Then his anger knew no bounds. Alone there in the road he hurled the most terrible oaths after the two creatures, threatening them with the direst punishment. All night he roamed the woods racking his brains for some suitable vengeance, and he found it.

He knew that near the crossroads there was an old bridge with bent and weakened beams which had long needed, but never been, repaired, with the result that it barely held together enough to give a crossing over the Loute, a little river, which cut the road in two. To cross this bridge, connecting the two parts of the road, was the only way for the hated automobile to take, since from this point there was but one road to Maufray. All that would be necessary, then, was to weaken the old beams in order to create an abyss in which would be crushed in a frightful mass his wife and his accursed rival.

Impatient to taste his vengeance, the banker awaited the approach of the hour when Armand would again bring Martha from Maufray. When the time came Stéphin went to the old wooden bridge and there began his work. It did not take long. Doubling his energy and regarding his work with cries of rage, Stéphin had quickly snatched away the old planks. The wood flew apart noisily and the pieces floated away on the current of the river. When he had finished he wiped his bleeding hands and contemplated his work. Where the bridge had been yawned a great hole about three yards wide and very steep. Stéphin smiled and withdrew to hide himself behind the shrubbery at the further end of the bridge.

He had not long to wait. Already on the road, descending the hill with frightful swiftness came the big car bearing the happy . . . Like a giant meteor the monster came with terrible snorting, seeming to defy all obstacles, so superb was its course. Armand at the wheel was radiant with foolish joy, and Martha reveled in the speed with which they flashed along.

Suddenly a frightful cry rang out. The bridge was no longer there. Armand had seen the danger! . . . To stop! Impossible—it was too late! Lost! . . . No! With a touch of his hand, giving the utmost rate of speed Armand shook the car with formidable trembling. . . . The im-

pulse was superhuman. The car leaped out over the abyss . . . the wheels, turning in the air, had not time to stop . . . there was no shock, the opposite bank of the river being lower than the first. . . . With a prodigious bound the carriage alighted on the road again and continued its flying course!

It was nothing but a tiny black speck on the horizon when Robert Stéphin staggered out from his hiding place, his face blanched. . . . He had seen, but he could not believe it. He advanced to the edge of the trap which he had made, looked at the marks left by the wheels on the dust, turned towards the black point just disappearing, then suddenly awoke the echoes with loud, harsh laughter!

The unhappy creature had become mad!

Not Odometer Measurement

The judge, lawyers and everybody else were badgering an Irishman about the speed of an automobile which he accused of having run him down.

"Was it going fast?" queried the judge.

"Yis, it were," answered the witness.

"How fast?"

"Oh, purty fasht, yer honor."

"Well, how fast?"

"Purty fasht."

"Was it as fast as a man can run?"

"Aw, yis," said the Irishman, glad that the basis for an analogy was thus supplied to him. "As fasht as two min kin run, and then it would have bate the both of 'em a mile."

To Go the Limit

A prominent French autimobile engineer recently stated that it would not be possible for a modern racing automobile to exceed the speed of 130 miles an hour while it is limited to the present weight. M. Serpollet, the designer of the well-known steam car of that name, has therefore decided to approach this maximum as near as possible during this year. He is now constructing a steam car which he is confident will accomplish the kilometer in 18 seconds, or at an average speed of 125 miles an hour. The motor will develop over 200 H. P., and the weight of the engine without the steam generator or boiler will be only 330 pounds.

A Go

"Are there any new improvements in the line of cheap second-hand runabouts since I was here?" inquired the enthusiast.

"Yes," said the salesman, "one just came in this morning. It is a folding horse to be carried under the seat and used in case of a break down."

Chain Drive or Bevel Gear?

By James E. English

THE consideration of the merits of the bevel gear drive for automobiles as compared with the chain drive is naturally before the purchaser when he thinks of buying. The two types or principles still exist side by side in the bicycle, and, very likely, always will. One purchaser is best suited by a chain for his particular kind of use for a bicycle; another is best suited by the bevel gear, all things considered.

It is probable that this will be the final outcome in the automobile industry as well. There is no apparent reason why the two systems should not exist, why each should not fill the wants of a certain number of purchasers. One manufacturer or purchaser may be the strongest kind of an advocate of the bevel gear and another of the chain.

The efficiency of the two systems was very carefully gone into, in connection with bicycles. It was positively determined by the experiments of Denton, Souther, Carpenter and others that the difference in efficiency was so small, as compared with other losses of power in the bicycle, that it might be entirely neglected.

For example, the difference between a racing tire and a road tire was easily shown to be from 5 to 15 per cent. loss of power, while the difference between chain and gear drive, all other things being equal, it was impossible to measure. The amount of air pressure in the tires could be easily measured, and made a difference of 4 or 5 per cent. Consequently, it is fair to say that any consideration of the loss or gain of power of the one system more than the other may be disregarded.

Looking at the construction in each case, it is seen that the engine power is transmitted by a shaft, alike in both systems, through clutch and transmission gears. With a chain driven machine there comes next a pair of bevel gears driving the countershaft, which carries one or two small sprockets, depending upon whether single or double chain drive.

The chains then transmit the power

from the small sprockets to large sprockets directly connected with the rear wheels, running loose and independently on the rear axles.

In the case of the bevel gear, the shaft, after leaving the transmission case, is carried directly to the rear axle, and has on its end a bevel gear pinion meshing with a bevel gear driving a

shaft directly attached to and rotating the rear wheels. It is to be observed, therefore, that both systems transmit through a set of bevel gears, the arrangement being quite different, however.

As to strength of construction: The rear axle of a chain driven machine is exceedingly simple in its construction; it is exactly like that of any wagon, except that sprockets are attached to the hubs, to be driven by chains.

The rear axle of a bevel gear driven machine is considerably more complicated. It has the bevel gears at its center, thus dividing it; an outer tubular axle through which the driving axle runs, in which are supported bearings for the interior moving axle. Properly constructed, with a sufficient knowledge of the strains involved, and due consideration of the power transmitted, little trouble has been experienced, and the machines made by reliable makers have given good satisfaction.

In short, the complications of construction are all centered on the rear axle of the bevel gear driven machine, and are not distributed between the rear axle and the countershaft, as on a chain driven machine.

The care of a chain driven machine, as to lubrication and wear, is distributed between the countershaft, the chains and the rear sprocket.

The care of a bevel gear driven machine is all confined to the rear axle, which must be thoroughly lubricated by the best of oils.

Both systems of transmission have been in use in the mechanical world as far back as records go. Immense improvements are being made in both the manufacture of chains, sprockets and bevel gears. The nicety of manufacture, relative cutting of chain and sprockets, and fine meshing of bevel gears has become an art, a specialty in machine building. Some makers have found that relation between pitch of chain and sprocket which gives noiseless transmission; others have not. Some makers have put out bevel gears which are positively noiseless and cannot be felt; others have not.

The purchaser is free to buy without being greatly influenced by the form of transmission, being reasonably sure that the best of either kind will give him good satisfaction.

It will be seen at once that the above remarks do not apply to any automobile, the crank shaft of which is parallel with the rear axle. It does apply to all machines with crank shafts perpendicular to the rear axle.

Ross' Marriage

By Kenneth F. Lockwood

ROSS always declared that when he got married he didn't want a great fuss made over the event. He said that rice down the back of one's neck makes one feel so uncomfortable that life isn't worth the living. Once, he declared, he attended his brother's wedding and in a moment of forgetfulness he followed the bridal couple to the gate of the railway station after the ceremony. He thinks somebody mistook him for the groom—they looked alike—and the result was a shower of rice big enough to sink a ship. Half of it went over him and the other half stayed with him and went with him on a visit to his best girl, which visit was considerably shortened on account of the rice. Ross said he never went through such a miserable hour and a half in all his life. Of course, he couldn't explain and he couldn't put up a plea of sickness or a previous engagement, because he was in the pink of health and had made the appointment himself for that evening. So he just sat still and bore it as best he could. But ever after he steered clear of weddings.

Then there is the question of old shoes. If there is anything besides rice Ross really dislikes, it's an old shoe. The application of one after a wedding always reminds him of his youthful days and brings unpleasant memories of certain minutes which he spent bent in a recumbent semi-circle over his father's knees, and Ross doesn't like to think of those times.

Exclusive of rice and shoes there is the matter of tying ribbons on the bridal carriage and the marking of bag and baggage. Ross considers the custom inane and silly and he has no sympathy with it. He thinks people who do such things should put in a requisition to the commissary department for a padded cell and one straight-jacket.

Now I don't want you to get the impression that Ross is a crank. I am merely trying to lead you up to a point where you may get an idea of how he must have felt when, the tidings of his forthcoming marriage having been spread, through wedding invitations and otherwise, his hundred-odd friends and those of his fiancee announced that they would give him a "send-off" which would close the business houses and send the police to the scene in a frenzy of riot alarm. The determination made, a convention was called to formulate plans for the best way to accomplish the purpose and while these plans were not made public they nevertheless reached the ears of the trembling prospective husband, who was at his wits' end to hit upon a method by which they might be frustrated. Think as he and his fiancee would, they could see no way out of it. In this predicament he bethought him of Mr. John Morrison, an old friend of the family, upon whose judgment and good faith he felt sure he could rely. To him, therefore, he unfolded his trouble from beginning to end.

"My dear fellow," said the genial

Morrison, when the tale was ended, "it's the simplest thing in the world."

"I can't see it that way," replied Ross.

"Of course you can't. You haven't thought of the one thing—really the most-talked about thing in the world."

"And that is——?"

"Never mind what."

"But——" Ross began.

"Don't worry," said Mr. Morrison. "Just leave the whole thing to me and

I'll see you through or my name ain't John."

Ross' face expressed a woeful doubt.

"You haven't much faith in me," Morrison remarked.

"It isn't that exactly, but——"

"Now, never mind. I've said I'd see you through, and I will. Have you got a friend who could keep a secret?"

"Claypoole?"

"Your best man! Certainly not!"

"My brother?"

"Worse yet. That boy of mine'll do. Now, go home and sleep and don't let the thing worry you."

So Ross went and tried to forget everything but the wedding ceremony itself—a sorry task.

* * * * * *

The night of the wedding came at length. In the home of Ross' fiancee, where the matrimonial knot was to be tied, there was much suppressed laughter and many exchanges of smiling glances. Numerous packages were surreptitiously deposited in the dark corners and the men's pockets bulged suspiciously. There was an atmosphere of exultation, an air of "we're-going-to-fix-you-old-man" about the larger part of the guests, and these silent expressions of foreboding did not escape the notice of Ross as he entered the room with the idol of his heart on his arm. Vainly he looked around for Morrison and his anxiety nearly caused him to forget to respond to the minister's questions. Once, indeed, the "best man" was compelled to nudge him, and his "I do" was delivered in the tone of a man who had just awakened from a long, deep sleep.

At length the ceremony was completed and the friends of the couple, who seemed to fill every square inch of breathing space, crowded around the newly-made husband and wife. Still there was no sign of Morrison and Ross decided that it was "all off." He was shaking hands with a friend when a boy's voice whispered in his ear:

"Dad says slip up the front stairs about six minutes before train time."

Ross, exultant in a moment, nodded, and the messenger disappeared.

When six minutes before train time rolled around Ross noticed with dismay

GETTING AT THE CAUSE OF IT ALL

that many of the guests had already left, presumably to be at the station when he and his wife arrived. Those who remained at the house were no doubt prepared to see that the first installment of the misery was properly attended to and then to follow the nuptial carriage. But there was no time to spend in idle worrying and he whispered Morrison's message to his wife. Edging away from the crowd they silently crept up the front stairway and along the second floor hall to the steps that led to the kitchen. Down these they went, and as they passed through the cook's domain loud voices sounded from the front of the house. Ross knew instantly that their absence was discovered and he acted quickly. Sending the girl ahead with instructions to wait for him at the rear gate, he took the key from the kitchen door and turned it in the lock from the outside, thus shutting off pursuit from the inside. Then he flew to the end of the yard where Mrs. Ross was waiting. For fully a minute he fumbled with the bolt to the back gate, but when at length he succeeded in sliding it back and flung open the wooden barrier the smiling face of John Morrison greeted him from the front seat of a throbbing twenty horse-power automobile. As he helped his wife into the rear seat Ross acutally smiled for the first time in forty-eight hours. Yet it was nearly three-quarters of a mile to the railway station and he felt that the party which had gone ahead must be half way there.

"Supposing the train should be late?" he muttered.

Morrison overheard him and, as he started the auto through the alley, he said:

"She ain't, though. I made sure of that before I sent you word."

Ross looked at his watch.

"We've got less than five minutes to catch it," he said.

"We can do it in three," replied Morrison.

"But the speed law! It only allows ten miles an hour."

"We'll increase it to twenty tonight."

"But if we should be arrested," chimed in Mrs. Ross.

"We won't be," Morrison declared with sublime confidence. "If we are, the cop that does it will have to follow me to the station, and I'm willing to pay the fine for the fun of fooling those people. You two keep still and hold on tight."

Such a ride it was! The auto flew so fast that it skipped the gutters entirely and forgot to jolt over cobblestones. Houses sped by like blurs on the atmosphere and pedestrians were mere dots against a rushing background. The wind tore through the bride's hair until it was on the verge of tumbling down and Ross' necktie somehow or other had squirmed up under his right ear. Once he wished he had taken the carriage, but he didn't voice the sentiment. He sat with teeth firmly clenched, holding on for dear life with both hands. The girl, too, was agitated, but Morrison chuckled and frequently admonished them to "hold on." "We're almost there, now," he said repeatedly. Once they passed a policeman, who raised a warning hand, but the man at the wheel merely bent his head and kept on, Had not Ross' whole attention been devoted to holding on and keeping his seat, he might have noticed that the automobile passed the railway station in which he expected to take the train. This railroad, over which he and his wife were to travel, has two stations in the city—one downtown and the other uptown—about a mile apart. The wedding guests who had gone in advance, chose the one nearest the bride's home, knowing that Ross and his wife would not have time to reach the other in a carriage. But they calculated without considering an automobile, whose objective point proved to be the station most distant from the scene of the nuptials.

So, after all, Ross escaped the perils of rice and old shoes, but he says that twenty miles an hour is too fast for him, and that the next time he takes an automobile ride he hopes there will be a policeman with a watch on the seat beside him. But then there is very little of the sportsman in Ross' makeup.

Isinglass as a Beauty Protector

Isinglass masks have been used by the French smart set for a year or two, but they have only lately arrived in New York. Not only is the isinglass mask a perfect safeguard, but once upon the face it becomes a wondrous beautifier, which should make it the rage at once, and increase the sale of motor cars appreciably. To be a fiying vision of loveliness is cheap at any price. The few examples of the mask which have arrived are each attached to a new model automobile hat and the combination costs $25. When demand for the mask increases it will doubtless be sold without the hat.

Winning the Atheling Cup

By M. Pollough-Pogue

WHEN a rich relative died and Winchester suddenly found himself wealthy be bought a racing car, the fastest he could get; when he lost his money he sold her; he had to.

He sold the car in September to a man named Walling.

The great road race for the cup offered by Mr. Henry Atheling was to be run over a course in Queens and Nassau counties on Long Island a month later. The car was to start in the race. Walling was to drive her.

Walling made thirty circuits of the course, in order to get familiar with every meter of it. "If luck is my ally, I'll win that mug," he said to himself. For he had "the best car in the bunch," as his mechanic, Clancy, expressed it, and Clancy was a mighty good judge in such matters.

But the executive gods who adjust the affairs of men as you would adjust the coil, or the mixture, had arranged it differently.

One day, a week before the start of the race, Winchester was driving the car over the course, and Walling was riding with him.

They were on the Jericho road; the long, green car was slipping along on her second speed over a smooth and level tangent of macadam.

With gloomy face and brooding heart, Winchester sat gripping the big steering wheel with his large, strong, hairy hands. Through his mind surged a flock of painful thoughts. Cold waves of regret swept over him. He was reproaching himself bitterly for the follies which had swallowed up his money.

If the devil had appeared and offered Winchester as the price of his eternal soul the money to buy the car back and had thrown in the privilege of driving the car in the cup race, Winchester would have sold his soul gladly and would not have thought the price too high, either.

To him the car was not alone a powerful and beautiful machine; there was in her something akin to a soul. She possessed human faculties; she was sensitive and responsive, perceptive, sympathetic, proud and eager. At times she was capricious, at times she was frankly perverse; she was complex and inscrutable as a woman. She talked in a language intelligible to him only. For a year and a half he had driven the car and looked after her, and treated her with tenderness and consideration, and brooded over her jealously. He loved the car.

Presently Winchester swung around a bend and saw some distance ahead a gray racing car with a carroserie like an up-turned canoe. He slipped in his third speed and with the rush of a huge projectile the big car shot smooth-

ly forward on her direct drive. But the next minute Winchester checked the flight of his car. The gray racer had stopped; she was in trouble. Her driver stepped from the car as Winchester and Walling drew near, and rapidly took off gloves, goggles, and a long dust coat with a hood like that of a Trappist monk. Winchester threw out the clutch, throttled the engine and set his side brakes. His car stopped with her cooler within a meter of the gray racer's gasolene tank. The overtaken car had an extremely rakish look and was evidently of at least a hundred horse power. Her right-hand driving tire was flat.

But Winchester only glanced at the gray car. He was intent only on the driver.

The driver of the gray racing car was a woman of wonderful beauty, a woman so much more beautiful and splendid than any woman Winchester had ever seen before that he stared in amazement, and a warm thrill of delight in her beauty ran through him.

She was a tall girl of nineteen or twenty years, with wide, square shoulders and stout limbs and a round full figure that swelled in curves of the greatest beauty. Her features were straight and regular, her eyes were steady and frank and boyish. A great deal of red-gold hair lay in bright masses about her shapely head and wide brow. Her skin was sun-burned to a light bronze.

She had a proud, high-bred expression, and about her red lips lurked a most alluring sorcery. For a mouth like hers men have died. "The Argive Helen reincarnated," said Winchester to himself as he and Walling stepped from the car and lifted their caps.

"Good day," said Winchester to her. "You have had a puncture, I think You are alone, I see. If you'll let us help you it will give us great pleasure."

"It's very good of you," she answered, and a warm smile spread over her face. "I am immensely obliged to you. But I can easily take out the tube and put in a new one without help."

But Winchester insisted upon helping her and Walling also was insistent. They raised the wheel from the road with a jack and in a few minutes they had the punctured tube out and a fresh one in and inflated. Winchester had just screwed the cap on the valve after pumping the tire hard when a heavy steam racing car with a long black torpedo-shaped body plunged suddenly around a sharp curve, swaying drunkenly, and swooped upon them like a monster bird of prey. Winchester was standing to one side, out of the way of the steamer. But the girl and Walling stood side by side right in the path of the black leviathan. It was too late even for them to jump, but like a flash Winchester's arm shot out and struck the girl heavily. The blow lifted her off her feet and hurled her backward; she fell on the other side of the road out of danger. Instanly she sprang up but not before the great steamer had struck Walling. He was flung high into the air and fell in the ditch.

Winchester picked Walling up tenderly, and found that his right arm and left leg were broken. He was unconscious and had many bruises, but it was Winchester's conviction that the fractures were the only material injuries. Walling's tourist car, driven by his wife, whose brother, an army surgeon, was riding with her, came along fortuitously, and Walling, restored to consciousness by half the contents of Winchester's whisky flask, was placed in the tonneau. His wife pulled the throttle open and started for the place where they were staying.

The steamer had sleweo off the road, dashed into the ditch, and was wrecked.

Her driver and mécanicien were uninjured. They were picked up by another tourist car and driven to their headquarters.

So Winchester and the girl were left alone. The girl sat on the footboard of her car with half-closed eyes, limp and flaccid, as if weary to exhaustion, and beneath an immense weight of lethargy. She had looked death in the face and she had been severely shaken by the blow which saved her from death or serious injury. She had not yet recovered from the shock, in spite of her physical buoyancy. Winchester stood near her and his face softened as he looked at her. He had much chivalry in his nature.

Winchester was a big, brawny man, strong-faced, straight-limbed, square-shouldered, deep-chested, above six feet tall, and powerful as a grizzly. He had lived a free life out-of-doors. His great forearms, his hands, and his face where it was not covered by his short black beard, were swarthy as an Indian's—the work of the sun and the wind. The girl was filled with admiration as she regarded him wistfully; she felt the stirring of a new and delicious emotion when he grasped her hand. In his other hand he held his whisky flask. He was conscious of his awkwardness, but in a rough way he tried to comfort her. The shadow of death had stripped them both of conventions.

"Cheer up, little woman," he said tenderly. "Drink some of this," and he put the flask into her hand.

The whisky heated the blood in her veins, and her eyes brightened again. She gave him back the flask, and obeying a wild impulse he caught both her hands in his, but released them instantly.

"Feel better?" he asked. "Did I hurt you much when I struck you? It was cruel, but it was the only thing I could do."

"You saved my life," she answered with simple directness. Her voice was unsteady with excitement. His quiet manner, his deep voice, his great strength of body which her woman's instinct leaned to, his forcefulness, his tenderness, and his simple chivalry had kindled the wildfire of love within her, but the emotion was new and strange and she had not yet identified it; she had not yet realized what it was. She was filled with shyness and could not meet his eyes. She stepped down upon the road and he stood back a pace.

With a turn of the starting handle, she started the big engine without the least difficulty. Winchester was astonished. The girl's heart fluttered when he said: "I admire your strength. I didn't think there was a woman in the United States who could start a ninety horse power engine. With all the compression lifts, it's a man's work." "By Jove," he thought. "I'll marry that girl,' telling himself over and over again that he had found the only girl in the world who could make him happy, Winchester started his own engine. With throttles almost closed they drove slowly back to Hempstead.

As they drove clowly through the village a boy, running out, handed Winchester a telegram from Walling. It ran:

"Doctor fixed me up. Feeling com-

fortable now. Will you drive my car in the big race?"

Winchester's heart beat and hammered faster than any motor ever did. He laughed hysterically from pure joy. He waved the telegram above his head with a delightful grin. His large bright eyes were on fire with happiness.

A couple of minutes later the two cars crawled into the same garage side by side. By chance there was nobody else in the great place. Winchester cut out his firing and handed the girl the telegram. He was exultant.

"I am very sorry for Walling," he said, "but I am very glad to have the opportunity to drive this car in the race myself and I cannot help feeling elated that the chance has come to me."

The girl raised her eyes to his from the telegram and her glance seemed to stop the beating of his heart. All that was in the girl's heart showed in her face. His face turned white under the tan, then his heart glowed warmly and raced like an engine with the throttle wide open and the ignition advanced. He was a man in whom life ran high and he had read the meaning of her glance.

He thrilled hotly. He seized her hands. Her cheeks were flushing. "Her lips are ripe for kissing," he thought.

"We seem to have forgotten the conventions," he said. "I do not even know your name and it is only three hours since I met you, but it seems as if I have known you for years."

"The conventions are nothing to me," she whispered. "I am above the conventions."

He drew a deep breath and gripped her hands tightly. His intention was in his eyes, plain to see. He drew her to him and leaned down. "My dear lady, I love you," he said simply. But her supple body swayed away from him.

"No, no, no," she said. "Not my lips, not yet, dear." He raised her hands and pressed his kisses upon them.

In a moment she drew her hands away and stepped back a pace.

"For years," she said, in a low voice, "I have nourished in my heart a hope that some day I should meet the one man in all the wide, wide world whom I can love, the incarnation of my ideals, the splendid and heroic prince of my dreams, a man quite unlike the nice well-bred commonplace limited men one meets every day, a man with an adventurous spirit and a brave soul and a noble heart, a man like the men who lived in the time of chivalry, who were very big and very strong and valiant and honest and unselfish who had human faults, the faults of strong men, who were rough and coarse, perhaps, but tender and gentle and chivalrous towards women.

"Perhaps I am too exacting; perhaps I am anachronistic. At that time men lived a simple, free and unprejudiced life, conditions were different and from my point of view healthier and more wholesome; there was nothing decadent in the land, every day there was death to face, pain to bear, life to defend and the men to do it all.

"Perhaps I am unjust in assuming that many of the men I know have not the qualities I admire. The men who will drive their cars in the race tomorrow are men of high courage. Perhaps they have the other qualities I admire. Perhaps they are chivalrous enough, but their chivalry takes the form of a mechanical politeness, and they are too blase and indifferent to care about the other things.

"The lives they lead are very mild and decorous. The old spirit has been educated and civilized out of them, and they are lukewarm. They lack perspective, like the Chinese landscapes on

the tea-chests; they are without color senses, and beyond the understanding of any other than those who are responsible for their existence.

"I have always known that if ever I met the man of my dreams, my Prince Charming, I should recognize him instantly, and fall in love with him at first sight, in the old-fashioned, romantic story-book way. I have dreamed of him for years, and I know I shall meet him somewhere—sometime—if—I — have — not—already—met—him.

"I should not expect him to be faultless, only human; I should not expect him to be of great refinement. I know that all strong men are coarse-fibered, but I want his coarseness to be that of the primal man, not that of the regenerate man.

"Though I met you only three hours ago, I am sure that you have many of the things about you that the prince of my dreams has. Perhaps—you—have—them—all. Perhaps—you—are—my—dream-prince.

"But you must prove it to me. You must do something to prove that you are worthy. In the time of Chivalry, according to all the story-books, a man proved his love for a girl by doing something very hard to do. She gave her knight-errant a glove, or something of hers, for a gage, and the lover tied it to his helmet or to his belt, and went forth with a proud and brave heart to do the task she had given him. He rode forth, savage, splendid, dominant, eager for the task. Now I will give you a task, and"—she put one of her gauntleted driving gloves into his hand —"a gage."

Winchester bent his head and kissed the glove. Then he tied it to his belt. "Whatever the task is, my dear lady," he said, "it shall be accomplished if it is not beyond the strength of man."

(*To be continued.*)

Blocking His Game

Possible Purchaser—This touring car, you say, is only $3,000? I like the appearance of it exceedingly. But before I decide to buy it I should like to have a short ride in it, to see how it goes, and if you don't object I want to take my wife along. She has never ridden in one.

Salesman—That will be all right.

The Chicago Motor Car Supply Co.'s Artistically Designed Prize Vase

You may give me $10 to pay the expenses of a trip around the boulevards, including a stop for luncheon, the money to be returned to you if you decide to buy the car.

Possible Purchaser—Oh, well—er—some other time will do just as well. I'm not in a hurry about buying a car, anyway.

(Passes on.)

By Jeanette Lowther Carey

Here's to the inn of the Golden Dream,
Far out on the broad highway!
Here's to the peace that reigns supreme
Through all its idle day!

With a shady, vine-twined portico,
Aluring from the heat;
A place where vagrant breezes blow
Through honeysuckle sweet.

There's ever a dreamy atmosphere
Free from a carking care,
And ever a boon companion near
The joy and cheer to share.

There's talk that touches deep the heart;
There's silence saying more;
There's wine and song, and ere we part
There's a toasting o'er and o'er.

Oh, it's easy to halt where a brimming drink
Awaits your fancy's call;
So tune your soul to the silvery clink
Of the ice in the glasses tall.

Forget the world and its toiling scheme,
Let worries fade away,
Here's to the inn of the Golden Dream,
Far out on the broad highway.

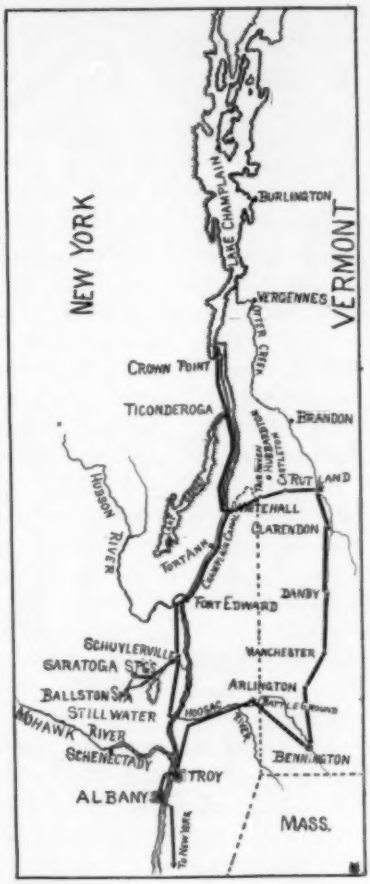
Through Historic Country

By Robert Bruce

IN the strenuous pursuit of the almighty dollar, the American nation takes little time for the study and reflection of by-gone events. I, being a good American, followed these principles till past the half century mark, when too close application to business produced a general breakdown. Having overtaken a few dollars, enough to prevent worry for the future, I changed my occupation to the pursuit of health and found it a much harder proposition.

On the advice of my physician to be in the open air as much as possible, I purchased an automobile, procured and "imported" chauffeur and made daily trips to the parks or the boulevards. Finally becoming more and more imbued with the automobile fever, I studied the machinery and in the end dispensed with my dapper assistant, guiding my car personally through byways and lanes, happily with the usual result, that my love for the sport became more keen than ever.

My son (not a "chip of the old block") is associate professor of history in one of our growing universities. Having a particular fondness for the history of our own country, for the last two years he has been begging me to make a series of trips through historic scenes in the automobile under his guidance. Since I have indulged his whims for nearly thirty years, it is not to be wondered that, in the end, he had his own way. I received so much enjoyment and formed so intimate an acquaintance with scenes and places of real interest to all good citizens that I have written this description, the ultimate purpose being that it may cause others to make the pilgrimage and become, as I have, prouder of the men who made us an independent nation.



Leaving New York we proceeded up the east side of the Hudson by way of the old-time, well-built and well-kept Post Road. Ever and again we passed quaint structures of taverns and inns, survival of the days before the quietness of wooded hills was disturbed by the continuous rush and rumble of "four-track" travel. Many of these low-eaved hostelries are again receiving travelers with ancient but well-remembered hospitality. The contrast between one's mode of arrival and the lapse into fifty or more years agone, while partaking of a simple meal, will be found very agreeable to the wearied Manhattan man fleeing from business cares.

At Rensselaer a bridge is crossed into Albany, the capital of the Empire State. If not familiar with the magnificent building proudly set on the hill, by all means take time off for patriotism's sake if not for love of the beautiful, for New York may well be proud of the fine home of her government. The suburbs will be found to contain much of interest should time permit, especially the high viaduct over the New York Central tracks with the macadam boulevard leading north, a little off the direct route, to be sure, but worth trying.

I wanted to go direct to Saratoga and make that our headquarters, but the "Professor" persuaded me to follow the route already laid out by him, which is shown in the accompanying map. After indulging in some side trips we took the direct road from Albany, passing Watervliet Arsenal where some of the largest guns in use by the National Government have been made. Crossing the bridge at Nineteenth street, Watervliet, to Congress street, Troy, we soon found the asphalt route through the city—however, we stopped awhile at Rensselaer Inn to refresh the inner men, meanwhile noting its somewhat unusual deviation from conventional lines.

Later we took the trolleyless, slightly hilly continuation of Hoosick street (the Stone Road) finding it a pleasant run through several villages to Bennington. We came here first because General Burgoyne was not at the battle of Bennintgton and it did not spoil our plan of following the path from Crown Point to Saratoga taken by him in 1777. This place, my son informed me, was the headquarters of the Green Mountain Boys. He conversed entertainingly of Ethan Allen, Warner, Baker, Cockran and Sunderland as we swung along over good roads. More prominent was it in 1777 as the supply station for the Patriots in that section, and General Burgoyne, much in need of food for his army, sent General Baum with his Hessians to capture it.

We made a brief stop at the Green Mountain Inn or Catamount Inn, so called from a stuffed catamount on top of the tavern sign. This was the meeting place of the Council of Safety who refused to recognize the authority of the New York colony in this territory. This question of jurisdiction between the colonies of New York and New Hampshire was long and bitter and caused much hard feeling which was even carried into the war with Great Britain.

The Professor assumed the air of a pedagogue, and I ran the car more slowly the better to hear his dissertation, which ran on in the following manner: "General John Stark, a veteran of the French and Indian wars, had served with distinction under Washington in Sullivan's brigade at Trenton, Princeton and New Brunswick, but depending entirely on merit for promotion, as poor a thing to do at that time, it would seem, as now, his name was removed from the list of colonels eligible for advancement by Congress.

"Twice being slighted since the war began, he resigned his commission and returned to his New Hampshire farm. With the unchecked advance of Burgoyne four months later, prompt action was necessary and he was tendered a commission by the Committee of Military Affairs of New Hampshire, which he accepted on condition that he should act independently of Congress or officers appointed by that body.

"General Philip Schuyler, at that time in command of the Patriot army in the north, heard of the militia assembled at Bennington and sent an officer there to move them to his army, but General Stark showed his commission and refused to obey Schuyler's orders, as he believed Bennington too important a

THREE METHODS OF LOCOMOTION MEET

place to be left unguarded. Stark wrote Schuyler, however, that he would co-operate with him as soon as the danger was over.

"The battle field is north of Bennington on the Walloomsac river (which we are nearing). General Baum finding his army opposed by considerable force, hastily entrenched himself and his Hessians, old and tried soldiers from European wars, on a small hill. Here he was attacked on all sides August 16, 1777, about three o'clock in the afternoon, and in three hours the Americans were victorious, having captured the whole force except the Indians who had fled at first assault.

"Before the Patriots could be assembled in any sort of formation, firing was heard in the direction of Cambridge and a scout reported six to seven hundred Hessians under Breymen were approaching to support Baum. The Americans were rapidly falling back when Warner and Emerson's men came up and around these troops a stand was made. Cannon captured from Baum were turned against the British and they were driven in retreat.

"This battle gave the Patriots needed supplies; four brass cannon, a thousand stand of arms, sabres and several loads of army supplies with ammunition wagons, horses and instruments of two drum corps. Two of the cannon are at the Capitol at Montpelier, Vt., a third is at New Boston, New Hampshire, and trace of the other has been lost. This engagement was remarkable owing to the fact that it was won by the militia, no regular Continental troops participating. It was a great victory, as it was the first check Burgoyne received and deprived him of much needed supplies."

After loitering about and seeing the country we proceeded north through Shaftsbury and Arlington to Manchester, and on through Danby, Wallingford and Clarendon to Rutland, all of which course abounds in beautiful scenery. Vermont offers to the tourist scenes somewhat out of the ordinary. From Rutland we turned west to Castleton, through Fair Haven to Whitehall where an arm of Lake Champlain is reached. On through Ticonderoga with its ruins to Crown Point, which place we considered the real start of our trip.

About this time my son delivered another speech to me and since it gives so fine an idea of events, I will repeat the substance of it. He said: "The fort at Crown Point was built in 1731 by the

French and was of great strategic importance in the French and Indian wars, not being captured by the English until 1759. General Amherst during the winter of 1759-60 began the erection of a large fortification which, though never completed, cost in the neighborhood of $10,000,000. On May 11, 1775, Seth Warner, a companion of Ethan Allen, at the head of a party of Green Mountain Boys, captured the fort from the dozen British soldiers garrisoned there, but in 1777, when the army of Burgoyne came down the lake, it was abandoned by the Patriots."

The scene from Crown Point is magnificent, commanding a view of the lake in both directions. This was the stronghold of the French, called by them Fort St. Frederick, and from here the Indians after receiving the blessing of the priests would start on their murderous journeys, which did so much damage to the New England settlers along the Connecticut river.

Standing on this eminence we tried to picture the flotilla bearing the British army sailing down the lake to capture Ticonderoga. We retraced our route to Ticonderoga and took the road to the fort. Passing through the toll gate and reading the bronze plate placed there by the Sons of the Revolution, we had not gone far when the line of earth work, extending from water to water, was visible. My attention was called to the fact that this was the defense that played such havoc with Abercrombie's army in their efforts to capture the fort. Montcalm's force repulsed them and they retreated to Fort William Henry at the southern end of Lake George.

Continuing through the woods down the road we found remains of the second line of defenses. The local golf club have a five-hole course within this last line of earthworks. We sauntered around the remains and found many curious, interesting ruins. There were two underground passages from the fort to the lake to supply the garrison with water. The roofs of these passages have sunken but their lines are shown by the trench-like formation that is left.

Here was the opportunity for a third discourse from my learned guide who informed me: "Ticonderoga was supposed to be the gate to the highway and waterway from Canada to the Colonies but was overrated in its strategic importance. It was well known from its former importance in the Colonial wars, both in England and France. When, therefore, Ethan Allen and his Green Mountain Boys, together with Benedict Arnold and part of the Connecticut regiment who accompanied him, captured this fort in the early dawn of May 10, 1775, without losing a man or firing a shot, it caused great rejoicing throughout the Colonies and made France respect our agents there the more.

"On July 2, 1777, Burgoyne's forces attacked Ticonderoga, then defended by General St. Clair who abandoned the fort on July 5, three days after the attack, and retreated through Hubbardton, Castleton, Whitehall (then called Skeenesburg) to Fort Edward. Warner was left to defend the rear and delayed the advance of the British with skill, though only with a handful of men."

Leaving Ticonderoga we rode to Whitehall. This was the home of Colonel Skeene, who was a loyalist and in the end had all of his property confiscated. At this place the Champlain Canal enters Lake Champlain. We proceeded down the tow path and passed Fort Ann, where a small force of Americans were defeated by Burgoyne's troops, but the Patriots set fire to the fort and retreated to Fort Edward. While there we spent a short time to stop by the grave of Jane McCrea and

THE OLDSMOBILE TRANS-CONTINENTALISTS

note the monument erected by the local chapter of the D. A. R. upon the spot where she was killed.

Fort Edward is to-day an enterprising mill town on the Hudson river and one's imagination must be highly developed to people it full of red coats and Indians, though the foundation of the old fort is still traceable, the fort having been burned by Israel Putnam. General Philip Schuyler had headquarters here for a time and after destroying bridges, felling trees across the road and making the advance of Burgoyne as tedious as possible, retreated to Stillwater down the Hudson, about thirty miles above Albany.

The loss of Ticonderoga to the Patriots was a severe blow to the cause in a diplomatic way for France began to cool in her courtesy to our agents there and Great Britain magnified the advantage gained as paramount to the entire suppression of the Colonies.

The murder of Jane McCrea at Fort Edward by the Indians was indirectly an aid to the patriotic cause for it so incensed the likewarm colonists that large numbers hastened to join the militia then forming. The loss of Ticonderoga and the brutality of the Indians under Burgoyne did more to create activity in the colonists that all the eloquence of their leaders. It was not so much a feeling of pratriotism as the urgent need of defending their homes and families. Burgoyne's abuse of the Indians after the McCrea murder lost him their support, for, without scalps and butchery, they had no incentive to fight.

On reaching the Hudson river Burgoyne's army was jubilant for now its advance to Albany seemed an easy matter and there it would join General Clinton's forces, sent up from Manhattan, and St. Ieger's troops, which were to march from Oswego by way of the Mohawk valley. Hearing of the large amount of supplies at Bennington, Burgoyne sent General Baum and later General Breyman, as a support, to capture these much needed necessaries with the result as described in the battle of Bennington.

Burgoyne marched his army to the heights of Saratoga while the Patriots under General Gates, who by political influence had replaced Schuyler, were encamped at Stillwater some miles be-

low. Then began a series of fighting, sharp and fierce, but without either side winning a decisive battle. The reinforcements of the Patriots were pouring in from all sides while Burgoyne was being deserted by his Indians and Canadian allies, and the messengers he received brought only bad news, namely, the defeat of St. Ieger at the Battle of Oriskany and his retreat to Canada, as well as the long delay of General Clinton.

The British made an attempt to cut through the Continental army but were driven back to their original entrenchments on the heights of Saratoga where they were surrounded and forced to surrender in a half-starved condition on October 16, 1777, the terms of which were drawn up at "The Convention of Saratoga." In this battle, as in all the early battles of the war in the North, Benedict Arnold—traitor—was a brilliant example of dash and energy, putting enthusiasm and spirit into his men, as few officers could. He was ambitious and had many enemies, who did all in their power to be-little him. The only one who appreciated his worth was General Washington and he did all he could for his advancement. Had his services met with the appreciation they reserved, there would have been no blot on his name but instead monuments raised to commemorate his achievements.

When the news of General Burgoyne's defeat reached France our representatives there, among whom was Dr. Franklin, were feted and honored and soon our independence was recognized. This defeat of the British, preventing as it did the massing of their whole force at Manhattan, was the climax of the Revolutionary war.

We followed the line of retreat from Fort Edward to Schuylerville along the Hudson shore, and there climbed the monument looking back over a large portion of the country over which we had driven and down upon the battle fields at our feet. Down the tow path to Stillwater we went finding still more interesting relics. This was eventually the route of our trip home, to Schuylerville and Stillwater, then through Mechanicsville and Waterford, across the the covered bridge more than a hundred years old yet strong enough to bear the large cars of the Hudson Valley Electric Railway, and down through old-time Lansingburgh to Troy and Albany. However, this time we retraced our way and went over to Saratoga Springs, a place of great beauty and very popular as a summer resort now as in years past. There we made our headquarters, taking many a tour from there finding plenty to keep us interested for some time.

I can recommend this same trip to every lover of good scenery, good air and good living, for though in many cases the hotels are small, the table is invariably of fresh, wholesome food. The roads are on the whole good, only fair in part but passable always. However, while the purpose of this trip was best carried out in the roundabout path taken, I would suggest Saratoga or Ballston Springs as a base from which all these points could be reached by short trips rather than one extended one. Whatever method may be used, it will be found worth while.

What Efficiency Means

By Remington V. Vernam

THE term efficiency, like the much abused term horse power, may mean a great deal or nothing at all. It depends on the man who uses it. In the engineering of great power plants efficiency has a powerful significance, and its value, coupled with the frequency with which it is used, has given it an important sound, and, naturally enough, a not infrequent use in a loose sense with no reference to its true meaning.

Taken in its purely generic use, efficiency is a measure of the relative usefulness of a process which converts energy in one form or another better suited to the needs of man; it is an abstract expression of the unavoidable losses which such conversion entails. It may be called an expression of the toll extorted by nature for the performance of any task, and is applicable to any process involving such transformation or to the machine which does the work. For example, the heat energy of the sun, feeding that mysterious existence which we call life, the plant life of a bygone age, is stored up in growing vegetation and there retained till centuries later; it is reconverted into heat by the process of combustion—the burning of the coal fire. But not all of the energy originally given to the plant life is to be reclaimed. A certain amount has been lost in the double transfer, a portion of which is concretely represented by the ash, and an expression for the loss is found in the ratio of heat applied to heat given up—the efficiency of the process.

So in the steam boiler and engine, a certain amount of the heat of the coal is available in the form of work, and a certain amount is to all intents and purposes lost, not lost to the universe, but lost to man; and the ratio of the power equivalent of the heat of the coal to the mechanical power available at the driving shaft of the engine is called the efficiency of the plant. Or, again, the engine alone being considered, the ratio of the power represented by a given quantity of steam at a stated pressure and the work which is developed and transmitted to other machines is termed its efficiency.

But efficiency may be of various sorts. It may embrace the process as a whole and involve merely the two energies, impressed and delivered, or it may refer to any one step in the process or to several steps taken together. The efficiency of a plant involves many factors of loss and a number of different processes, while the efficiency of a turning shaft is merely an expression for the frictional loss of its bearings. Thus, in an engine, the term may be applied in its thermal sense to a consideration of heat alone; mechanically, with reference to frictional losses and work absorbed by internal stresses; or, loosely, as a measure of its comparative value as a machine, powerful, serviceable, successful, merely as a statement of its ability to perform the various demands of its usage.

A serious consideration of the efficiency of a motor is, then, an investigation into its economy; and the relative value of the factor increases with the increase of the expenditure involved. In a large machine, whose consumption is by far the greatest factor in the expense of its operation, it becomes of very great importance, while in a smaller affair, whose consumption is limited, it may shrink to insignificance when compared with other factors which bear more directly on its utility. In the automobile motor, while it is actually just as im-

portant to get as great a proportion of work from the fuel as it is in a large lighting plant, still the cost of the fuel is so slight as compared with other factors, and the difference in cents or in distance traveled on one charge, between an engine of high and another of low efficiency, is so slight that it may well be set aside for other considerations.

The object of the designer in building a motor is to secure one of ample power for the car—one which is capable of doing its work under a wide variation of conditions; one which will carry approximately its full load throughout its speed range, and one which is silent, vibrationless, simple and not liable to get out of order. Of these, next to the desideratum of ample power, which is to be presupposed, the more important considerations are those which contribute to smooth action and simplicity of parts. The difference one way or the other of a penny-'orth of fuel is so slight as to come in for but a small share of consideration, if any at all. And a machine which is referred to as being "highly efficient," while satisfactory in every way, may yet be wasteful of its fuel.

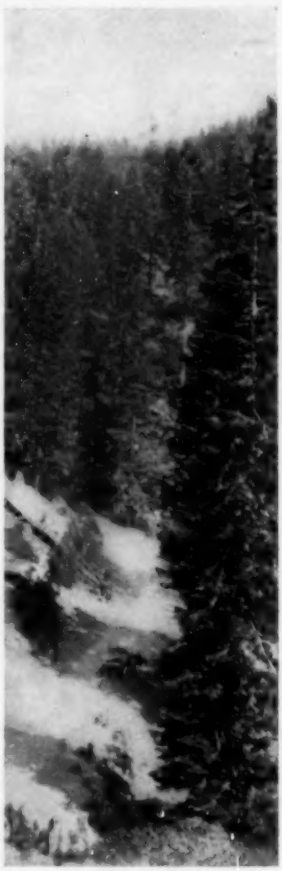
The factor of mechanical efficiency, involving as it does the friction of moving parts and their balance as well, is of far greater importance than that of the whole motor, or of the heat alone. And, although the factor is seldom, if at all, reduced to figures, it is to its increase that the designer's effort is largely bent at the present time. The improvements in lubricating devices, the increase in length of bearings, in some cases the application of ball bearings to the motors tending, as they do, to reduce the power lost in turning over the motor itself and subscribing to its smooth running qualities, serve to decrease its internal losses.

The better knowledge of the requirements of the cooling system which is gained by each year's experience is tending to bring up the efficiency from a thermal standpoint. Other improvements which look directly toward better service—that is, better ignition, better carburization and better control—also tend to bring down the fuel consumption as well. But the present objective of the maker is not to reduce the cost of operation as affected by the fuel consumed so much as it is to reduce the cost of maintenance, which has been the greatest cost, next to that of manufacture. It is to build a motor which will be cheap to construct and cheap to operate; easy to control and easy to get at; one which will be simple, silent and sure. But whether it be economical or wasteful of its fuel is of comparatively minor importance at the present stage of the industry.

Does a Motor Run Best at Night?

By Ralph B. Jamison

DID it ever appear to you that an engine runs smoother, easier and better at night than it does in the day time? If you are an observing driver you certainly must have noticed this, but unless you are an unusually clever one you have not been able to tell the why and the wherefore of this seeming improvement. I am not sure that my theories in the matter are the correct ones, but they are the only ones I have been able to work out as in any way explaining the change and so they may be of some value to others who like myself may seek to learn why the improvement takes place.



Assume the engine to be running full power and the atmosphere dry. Then a perfect carbureter will supply a full charge of exactly such proportions of gasolene vapor and air as will result in complete combustion. Now, if we suppose the atmosphere to hold a certain quantity of water vapor in suspension, as is the case in damp weather, I think consideration will show that for every reason loss of power will follow:

For (1) the atmosphere is less dense and there is less pressure to force the charge into the cylinder, (2) the water vapor will be converted into steam on entering the hot cylinder, and so greater resistance to compression will be offered, (3) the heat developed by the first part of the explosion will be taken up in part in expanding the free steam, and combustion will consequently be checked, and (4) (most important of all) the air being less dense, there will not be the same proportion of oxygen available, and combustion will therefore not be complete.

In considering these points, the simple principle of the gasolene engine should be borne clearly in mind, namely, that the mixture of gasolene vapor and air, when ignited, burns and forms carbonic acid gas and water (in the form of steam), and that it is the expansion of these gases, caused by the heat generated on their formation, which gives the power. The greater the heat, therefore, the greater the power.

On a bright, clear day the radiation of heat from the earth's surface is free and uninterrupted owing to the absence of clouds. When the sun sets, this radiation is very rapid and quickly cools down the air. This fall in temperature causes a portion of the moisture in the air to condense and be deposited; consequently the air is rendered a more efficient component for the mixture, and any engine inhaling it should develop greater power. This explanation is the one given to account for the familiar

phenomenon known as "fall of dew," and will be found in any text book on physics.

While the foregoing is my idea of the matter, Professor Ahlstrom, to whom I appealed for an explanation, said that without going deeply into the affair and assuming that the engine really did run better at night than it did in the day, that perhaps the cause for its doing so might be looked for along these lines:

I believe, to get the maximum of work from a gasolene engine, the cylinder must be hot (not overheated), and short runs tend to thoroughly warm up the cylinder, thereby thinning the coating of lubricating oil, and, if the piston rings are in good condition and a good fit, allowing the piston to work easier (without loss of compression) than if the cylinder were cold and the oil therefore thicker, tending to clog the piston ring.

Further than this, the hot cylinder warms the gaseous mixture at points furthest from the point of ignition, making it of a more even and higher temperature all through thus tending to quicker and more instantaneous combustion than would be the case if some portions of the mixture were of a lower temperature than others, the colder portions having more of a burning action than an explosive one. Now, as a contrary cause, you may have observed that on approaching the country from the town the engine runs better, due to the air being purer, this purer air aiding combustion owing to the greater proportion of oxygen which it contains. This would suggest the theory, therefore, that during the day the sun absorbs a certain amount of oxygen from the air, varying in proportion as the sun shines brightly for hours or only intermittently, then as the sun goes down and night approaches the air gets cooler, and being so contains a greater proportion of oxygen, therefore forming a better mixture.

To this I ascribe the fact that an engine developing a certain power requires less air in the colder months than in the warmer months to develop this power, the smaller volume of cold air containing about the same amount of oxygen as a proportionately larger volume of warm.

Take either my theory or that of Professor Ahlstrom as best pleases you, and you will in one or in both of them at least find a basis for formulating one of your own, if neither the professor's theory or mine suits you.

Make Haste Slowly

One blunder which inexperienced and nervous drivers frequently make, and which occasions them no little chagrin, is attempting to start the car with one or more of the brakes on, Another mistake of the same kind consists in advancing the ignition lever too rapidly upon an engine which is slowed down under load. Changes of spark position should be gradual, giving the motor time to accommodate itself to the new conditions and sparing the moving parts the stresses to which they are otherwise subjected.

Meteorological

"What's the matter with the old man?" asked the bookkeeper.

"The chauffeur who was bringing him down to the office this morning made a mistake and landed the automobile upon a pile of bricks," said the shipping clerk, "and he told the old man it wasn't his fault because he had to make a decision between going into the bricks or an open sewer quicker than a flash of lightning."

"What did the old man say to that?"

"He gave the chauffeur thunder."

In the Land of the Manumotive

By Reginald V. Pelton

"WHAT has Togo's blotting out of Rojestvensky's fleet got to do with the future of the motor vehicle?" said the man who had spent more than his fair share of "a cycle in Cathay," repeating my question as above. "Well, I'll tell you. It means the awakening of the greatest giant in all the world, and the eventual purchasing by him of self moving vehicles in numbers such as none can even dream of now. Remember the East is not going to follow in our wheel-marks. It is not going to arrive at the automobile via the ox cart-horse-steam-electric route of vehicular progression as we have done. To the contrary, it is going to start where we are now and unburdened with all of our animal and track conveyance rubbish it is going in for motor vehicles, and the end no man can foresee. If you had lived, jolted and suffered as I have through a long residence in the East and an enforced employment of the methods of transport in vogue there, you could perhaps better appreciate what an opening for improvement there is, and how the automobile can be most quickly and satisfactorily made to fill it. Let me give you some idea of the conditions as they prevail in China and then see if you do not agree with my ideas as to the stupendous opening which exists there for the motor vehicle.

"The people in China do not ride around in carriages and coupée and other four-wheeled vehicles like the people in more civilized parts of the world. The favorite conveyance of the man or woman there of means is the sedan chair, which is a box-like affair with a seat in it suspended by two poles, one on either side. It is carried by two or four coolies, who are called chair carriers. The chair is large enough for only one passenger. It has either ventilated or glass sides at about the height of the passenger's head, and a curtain front so that a person once in is screened from the sight of everybody. To get into these chairs one has to back up for there is not room to turn around once he is in. The color of the cloth covering of the chair will tell whether or not the occupant is of official rank. If he is an official his chair will be covered with green cloth. None but officials are permitted to ride in chairs covered with green cloth, and if an unofficial person dared to have his chair covered with such cloth he would be very likely to lose his head. Sedan chairs are often luxuriously fitted up.

"The vehicles used by the well-to-do people in and around the cities are the Pekin carts and the jinrikishas. The 'rikisha is a modern vehicle in China compared to the Pekin cart. The Pekin cart is an invention probably of Satan. This statement is made after many a ride in one. It is a two-wheeled instrument of torture and is drawn by a mule. It consists of a pair of wheels and an axle. To this axle are attached two long shafts. Built on the shafts immediately over the axle is a box about the length of the legs of a man of average size. The sides are perfectly straight to the height of the head of a man seated, then there is a curved roof. The straight

sides are of wood and are usually of openwork, the wood having been sawed into squares or angles or into designs of animals or fowls. To protect the traveler from the dust the inside is lined with muslin or silk according to the taste and wealth of the owner. The cart is built for one person, but usually carries three or four. To get into this cart you draw it up alongside a stepping stone and crawl in head foremost or else you sit on the edge and with the aid of your hands hunch yourself back. Once in you are at the mercy of the mule and the driver. Of course the cart has no springs. You may take a pillow along with you to sit on and another to lean back on but neither one will afford you much comfort. The tires on the wheels of these carts are not the ordinary smooth iron bands that form the tires on wagon wheels, but are iron bands with nubs on them. The nubs are set about three-fourths of an inch apart. Perhaps there is some reason for their being there aside from the obvious one of making the passenger uncomfortable, but to the writer it is unknown.

"A man traveling with a woman on one of these carts sits on the shaft opposite the driver. The shafts being fast to the wagon and likewise fast to the mule, when the mule trots the shafts go bobety-bob-bob; so does the man; so does the woman inside. To make the mule go the driver does not cluck or say 'go-long;' he goes 'b-r-r-r-r-r.' When he wants him to stop instead of saying 'whoa' he shouts 'u-u-e-e u-u-e-e' at the top of his lungs.

"The jinrikisha is a narrow two-wheeled carriage and is drawn by a man. It is the Japanese rival of the Pekin cart. It looks like the body of a large baby carriage set up on two wheels. The wheels are the size of ordinary carriage wheels, the axle is of iron and the carriage body is set on springs that from the standpoint of comfort make impossible a comparison between this vehicle and the Pekin cart. On the back of each 'rikisha is a straight bar of wood so that if you have money enough you can have a cooly push as well as one to pull. The 'rikisha has two narrow shafts connected at the extreme end with a straight piece of wood. The cooly who pulls steps between the shafts when you have seated yourself, and picking up the shafts is ready to start. If he is a man of medium height your seat in the 'rikisha is a comfortable one, but if he is over the medium, your seat is probably the most uncomfortable one you ever sat in except another just like it. The reason is that to pull with ease the tall cooly has to lift the shafts too high, and though you know that you won't fall you are absolutely certain, in spite of your knowledge, that you will go over backward and will probably break your neck. After you have ridden a few blocks in a 'rikisha, until you get to know the ways of the country, you begin to feel sorry for the man who is pulling you and you resolve to pay him more than the legal fee which in most places is 15 cents an hour. There is where you make the mistake of your life, for if you pay him five cents more than he is legally entitled to he will think you don't know what his legal fee is and will set up a howl that will simply make your blood curdle, and will demand more. He will gasp for breath and point to his shirt or his coat wet with perspiration and do other things to make you feel that you are a robber and an oppressor of mankind. Your only salvation is before you give way to that feeling, to seize him, turn him around quickly and wriggle your boot at him. Then he understands.

"The conveyance of the common people in China is the wheelbarrow. This is used for freight or passengers. The

OVER A ROAD THAT NATURE DESIGNED AND BUILT

Chinese wheelbarrow differs from the ordinary garden variety of wheelbarrow in that the wheel is in the middle instead of at one end. The wheel is as big as the ordinary farm wagon wheel. On either side of this, on a level with the axle, is built a seat—just a plain board running from a little distance in front of the wheel almost back to the handles. Altogether these side seats may be five feet long. A shield of plain boards is built over the top of the wheel so that a person may sit on the side seats without fear of getting either arms or clothing caught in the wheel. The wheelbarrow is pushed by a coolie. He has a strap attached to either handle of the barrow and running over his shoulders to help him support the weight. Sometimes nine or ten persons will climb on one of these wheelbarrows and one man will push them. An ordinary load is six. Each passenger pays a few cash for the privilege of riding. Perhaps a load of eight or nine will not net the barrow man 10 cents. It takes 10 cash to make a cent and 10 cash is a great deal to a Chinaman. When the load is properly balanced these wheelbarrows are not hard to wheel, but loads are seldom properly balanced and the average foreigner watches, expecting every moment to see the whole bunch dumped, an accident which seldom happens, but when it does happen always provides an excuse for each individual passenger to thrash the barrowman, a job by the way which is usually done by the load collectively.

"While I am on this matter of 'rapid transit' it may interest you to know that the 'rikisha is an extremely modern institution in Pekin. It has been introduced only a few years, and it has been bitterly opposed by the Pekin cartmen, who saw in the introduction of this 'modern' conveyance a lessened demand for their carts and mules. Right up to the time of the siege by the allied armies in 1900 fights between 'rikisha men and cartmen were of daily occurrence. The common people sided with the cartmen

and the 'rikisha man's lot was not a happy one. The 'rikisha was hated and feared by the cartmen as much as the railroad was hated and feared by the pack coolies and the river boatmen, whose business the railroads took away. The 'rikisha no less than the railroad was the work of the foreign devils. But with the coming of the Japanese all this ceased and now the Chinese are 'rikisha converts. With the recent triumphs of the Mikado's army and navy will come an almost inconceivable modernizing of the yellow people, and in no direction will that modernizing more quickly run riot than in the supplanting of man by motor power where transportation is concerned."

When Pipes Clog Up

While a sudden obstruction of the water circulation pipes of a gasolene motor is quite rare, a gradual accumulation of deposit is quite common where the water is hard, containing lime, and such deposit may become loose, as does the scale in a kettle, and, then being gathered in one place by the circulation, may obstruct the flow of the water. But before this takes place there must have been quite a noticeable gradual impairment of the cooling system's efficiency, not only from the reduced cross-section area of the flow, but much more because the scale greatly interferes with heat radiation, being a poor conductor. It is well to remember, however, that a loss of cooling efficiency will be noticed only when very hard work is required of the motor on a hot day, while ordinarily less cooling will even increase the motor power.

When Horses Shall Have Gone

By James Penrose Percival

WHILE motor vehicle history is being made with such a rush in this country it may be just as well to remember that we to-day are not altogether the Columbuses of a new vehicular world that we in our conceit are inclined to think we are. Almost a third of a century ago Dr. T. P. Wilson, at that time a professor in the University of Michigan, declared that the horse stood in the way of civilization, and asserted that without this arrival we could have rapid and cheap transit, clean and grassy streets and improved public health. He foresaw that some day rails would be laid in the streets over which commodious cars would glide quietly and swiftly, and urged at that early date that efforts be made to bring about the change as soon as possible. Dr. Wilson made his predictions in a letter to the editor of the Cincinnati *Gazette* which was published in 1873. In his prophetic communication he wrote in part:

"The cities of the country will always constitute the focal centers of civilization. Here we have the greatest refinement, the most intelligence; here we have music, poetry, art, philosophy and science most largely developed. Whenever the cities reach the limit of development, then the civilization of the nation is arrested. And for our American cities this limit is already reached, and all because men, blind to their own interests and the general welfare of society, cling to the use of the horse as a domestic animal. We stand appalled before the dire results of intemperance, but they are vastly less than the evils entailed upon us by the use of the horse.

"No one would more willingly than I pronounce a eulogy upon this noble animal. He has doubtless been foremost of all the brute creation in helping man to a higher social life. But that does not alter the fact that in all our large cities he has reached the limit of his usefulness, and now retards more than all other agencies combined the further progress of our civilization. The horse is the last vestige remaining of that primitive form of man's life before he enters the more cultivated one of the overcrowded city.

"Nearly three years ago an epizootic swept over the country and rendered entirely useless the whole race of horses. The business of the whole country was paralyzed for more than a month. It was greatly impeded for three months; and then it was that we first realized the utter subjection of the commerce of the country to the horse. And we stand daily upon a precipitous edge down which at any moment a more extended and fatal epizootic may plunge us.

"We spend millions to perfect our streets, and have never yet made one that is satisfactory! On the best of them dust and mud hold high carnival nine-tenths of the year. Yet noise, dust and mud are the penalties we suffer by persisting in the use of the horse. We find every city block not wholly given to commerce seriously tainted at some spot. The barn is as

inevitable as the horse. And the barn is the upas tree of the city. You cannot build it so that it will not poison the air and curse the ground.

"There is no economy in the use of the horse. The city needs rapid and cheap transit for goods and passengers. For the horse is no match for machinery. You enter the city and take a rickety, filthy old 'bus and go bounding, sliding and bumping along with far less pleasure than might a car of cattle go from Cincinnati to New York. You cannot ride in a private carriage and hold with certainty to your wig and false teeth.

"You may possibly tire of the repetition, but it is the solemn truth that it is the horse to which we are indebted for all this great failure to realize the true excellence and luxury of city life. Invention has been knocking at our door for years with improved motive power capable of transporting with greatly increased rapidity merchandise at, say, five cents a ton and passengers at one cent per head.

"Heretofore we have been denied these, because, forsooth, machinery will scare horses. Now take your horses off the streets. It may be that iron or steel rails may be laid like a network on all streets over which cars, clean, neat and commodious, shall glide noiselessly and swiftly; or it may be that some other and better plans may be invented.

"Do this and the civilization of the nineteenth century will awaken to a future of progress that no mind can estimate. And why should we wait for the publicist, the humanitarian and the leaders of social reform to inaugurate and consummate this revolution? It must come or we must stand still, making futile attempts at an impossible future progress, if we do not, in fact, retrograde."

To-day, long years after the worthy doctor had pointed out the way, the horseless city is within sight. It would be difficult to find any one not the editor of a New York daily paper, a legislator or a farmer who will say to-day that he believes automobiling to be a fad destined to pass away like other fads. On the contrary, all those who are not wilfully blind see that it has passed into the permanent vehicle period. It is in this field that the automobile most seriously menaces the supremacy of the horse, especially in cities. The car's use for delivery, express and trucking purposes is increasing constantly, and it is an absolutely safe prediction that within a comparatively short time the motor vehicle will monopolize those fields nearly or quite entirely. For pleasure riding, the horse still has many staunch champions, but it is none the less true that the automobile has the "pull" as the aristocratic as well as democratic method of locomotion, and that all persons who refuse to adopt it are looked upon as not quite up to date, not quite "in it." This is a powerful moral influence against the horse that will prove irresistible.

So far as the city is concerned, it would be an incalculable boon in every way to have the horse eliminated completely. Most of our street care and regulation troubles come from him. It is the pounding of his iron-shod feet and the rasping and grinding of the iron tires of the wheels of the heavy vehicles which he draws that wear out pavements and fill them with holes. With him would depart the iron tire, and the last excuse for stone pavement in any form. Rubber tires are both noiseless and harmless. A concrete or asphalt or wooden or iron pavement with ruber tires in sole use would last virtually forever. There would be no heavy shocks upon it, no sharp edges

to cut into it, and no dirt or filth communicated to it to convert into dust. By far the larger part of the work now done by our Street Cleaning Department would thus pass away with the horse. It is estimated that the expense of street cleaning, construction and maintainance would be cut down nearly or quite two-thirds. Virtually all the cleaning necessary of any street traveled only by automobiles could be done by flushing with a hose.

In place of the roar of our streets we should have a continual chorus of horns, which might or might not be a change for the better. So far as tunnel construction goes—and we are destined to have that quite continuously with us for many years—the elimination of the horse would work a transformation in that also. The feasibility of using iron for pavement, in case only motor propelled vehicles travel upon it, is maintained by many good engineering authorities. It would be easy to give such a pavement a rougher surface than asphalt, and it would consequently be less slippery in cold weather. Here again the absence of the iron shoe and tire connected with the use of the horse comes into play. With iron pavements would it not be possible to construct subways nearer to the surface, and place over them for street traffic a much simpler roof than is required now? Rubber tired automobiles, of no matter what weight, pass over a surface with far less tax upon its strength than vehicles drawn by heavy horses and equipped with iron-tired wheels. It is not weight but shock that is the wearing tax upon a structure.

The horseless city, when eventually it shall come, five, ten, or twenty years hence, will be in all ways a cleaner and more healthful place of living than the one which the horse pervades; but whether it will also be a more peaceful and more enjoyable place of abode is "another story" yet to be told, though one does not have to possess the ability to look into the future that Doctor Wilson did to answer this in the affirmative.

Knocking in Gears

Users of foreign cars who are bothered by knocking when the engine bearings seem in good condition should take a look at the spring drive. This is located just behind the clutch, and when collapsed is not noticeable in the running, except when the sparking is advanced. The remedy is to fit new springs, though temporary relief may be found by packing with blocks of india-rubber. Another source of knocking, and one sometimes very difficult to locate, arises from a slackness between the squared end of the propeller-shaft and the socket in which it works. This is particularly noticeable when the car is slowing down in ascending a hill, and on occasions when changing gear. To remedy such a knock the socket should be enlarged and thin steel plates should be inserted to make up a working fit to the squared end.

Why Racing Wheels Look Eggshaped

By "The Snapshotter"

DESPITE the use of the most expensive cameras equipped with all the improvements the art of photography has produced it seems impossible to take the picture of a car moving at high speed without the most curious distortions resulting when the prints are made. Usually the wheels take on the appearance of almost perfect ovals, while axles seem bent and the entire car out of line and harmony.

To gain an idea of why this phenomena takes place it is necessary to fully understand just how the exposure of the sensitive plate is made. All photographs of automobiles going at great speeds, and especially those which are taken within twenty feet of the motor, are taken with an instrument called a "focal plane shutter," that is, a mechanism acting at the focal plane of the lens, or directly in front of the plate. This mechanism consists, in a few words, of an opaque curtain, with a slit in it, which, by means of springs, passes rapidly from the top to the bottom of the plate, the exposure being made by the light passing through this slit as it crosses the plate.

For purposes of demonstration, we will consider that the plate is 5 in. by 5 in. in size. Now, if the opening in this curtain is 5 in. by 5 in., and it passes over the sensitive surface of the plate in the one-thirtieth part of a second, it is obvious that the exposure will be correctly stated as one-thirtieth of a second. If the opening is just half that size, however, 2½ in. by 5 in., obviously but half as much light can reach the plate as did in the above instance—and the exposure is equal to half the above period, or one-sixtieth of a second. Continuing in this way, if the opening in the curtain be but one-eighth of an inch in width and 5 in. long, or forty times less than the full width of the curtain, then the exposure is forty times less, or one-twelve-hundredth of a second, which is, in point of fact, the speed at which most of these mile-a-minute pictures are taken.

The next factor to consider is the relation of the distance between automobile and lens, and lens and plate, for, this known, and the speed of the automobile known, a simple calculation in proportion gives the speed of the image of the moving automobile across the sensitive plate. Suppose, for the sake of argument, that the distance from the lens to the plate is 1 ft., and from the lens to the passing car is 10 ft. Suppose that the speed of the car is greater than 88 ft. a second (mile a minute) and is 100 ft. a second. Then, to find the speed of the image on the plate in feet per second, we solve the equation:

10 (feet from object—) : 1 (foot be-

tween lens and plate) :: 100 (feet per second of car in road) : X (feet per second of image of car on plate).

10 : 1 :: 100 : 10; therefore, the automobile crosses the plate at the rate of 10 ft. per second, or 1 ft. in one-tenth of a second, or 5 in. (the size of our theoretical plate) in one twenty-fourth of a second. Now, if the speed of the slit of the shutter were one twenty-fourth of a second, a point would get its picture taken at the corner of the plate when the slit started to move; some point in the automobile just above this would get its picture taken further sideways, and the topmost point of the automobile, prabably the driver's cap, would get its picture taken at the other corner of the plate, since the motion of the slit and the motion of the moving image is performed at equal speeds. Naturally this would give a very distorted effect, the whole automobile appearing to lean in the direction in which it is going. As a matter of fact, the speed of the slit is from a thirtieth to a fiftieth of a second, and few automobiles go 100 ft. a second, or are taken with so long a focus lens so close as 10 ft. Therefore, the paths I have indicated more nearly represent the real state of affairs, and the path with least inclination is the most correct, as the car seldom, if ever, fills the whole plate, so that the space occupied by the machine is not more than 2½ in., which, of course, cuts the distortion in half.

I am sure to be questioned here by those not familiar with focal-plane shutters as to the correctness of my statements regarding the speed at which the shutters work. It is perfectly true that the picture as a whole receives an exposure which amounts to only one-twelve-hundredth of a second, but it is equally true that the small aperture in the curtain seldom, if ever, passes across the 5 in. of the plate in faster time than one-fiftieth of a second, about fifteen miles per hour. And this, when you come to think of it, is a remarkable thing in itself—that any mechanism, small and light enough to be carried in the hand, can jerk, from a state of rest, a curtain, rush it suddenly at fifteen miles per hour for 5 in., and then as suddenly check its motion, and all without breaking a spring or injuring the mechanism! If the matter is still not quite clear, go back and study carefully what I said above regarding the size of the aperture of curtain and the speed of the slit.

Another factor in this matter is that, by a law of optics, the image on the sensitive surface is upside down. By a law of the camera maker, curtain shutters operate from top to bottom. It is evident, therefore, that the bottom of the wheels and the bottom of the automobiles get their pictures taken first, then the middle, which in the meantime has moved, and finally the top, which has moved still more.

I now come to the last factor in this matter, and one which is really most important, as it is most interesting and seemingly paradoxical. The distortion is always greater in the wheels than anywhere else, and also always greater at the tops of the wheels. This would seem but natural according to the foregoing explanation were the distortion equal all over the car, but, on the other hand, that of the tops of the wheels far exceeds that anywhere else. This is because the upper parts of the wheels travel several hundred per cent. faster than the lower parts, while all the rest of the automobile moves at a uniform speed.

Obviously, the upper spokes of a wheel revolving on the ground travel, with reference to any fixed point, at a much greater rate than those near the ground. Of course, were the wheel re-

volving in the air, or considered with reference to its hub only, all parts would have to be considered as moving at the same speed.

However, we have to do with a fixed point, the lens of the camera. The slit of the shutter secures the impression of the lower part of the wheel first. As it slides across the plate and the upper part is taken, the speed of the image rapidly increases as it approaches the top of the wheel. The motion is thus shown more plainly at the top of the wheel than anywhere else, and any given point has a chance to slide a little further on the plate than those below it, which gives to the top of the wheel a blurred look as well as a distinct forward inclination.

It may be interesting to know that when the upper spoke is absolutely perpendicular its extremity it going at double the speed of the car—120 miles per hour, if the car be making sixty; 200 ft. per second if the car be making one hundred. This also is a very simple calculation. The spoke from the free end to the ground end is to be considered as a lever. The ground end is the fulcrum, the hub the point of power application. As the upper point of the spoke is twice the distance from the fulcrum that the hub is, any movement of the hub must be twice amplified at the upper part of the spoke. Consequently, if the hub (the car) is making sixty miles per hour, the upper point of the hub must be twice amplified that, or 120 miles per hour. Of course, this condition of affairs obtains for only a theoretical instant. The fulcrum is not fixed, but moving, and the upright spoke of one instant becomes the horizontal spoke of the next.

Still, in dealing with pictures, we have to do with minute fractions of a second, and the doubled speed of the top of the periphery of the wheel is an important factor in the egg-shaped distortion which I have tried to explain in as simple a way as possible.

Exorcism of the Pink Phantom

The scorcherinos of the Utopian age were indeed of a humane disposition, though sorely tried by the foolish whims of the proletariat. Many pedestrians still made efforts to use the streets as places to stand gape about in, with the very natural consequence that the hospitals were filled to overcrowding.

At last the patience of the scorcherinos ceased when they realized that the front boards of their expensive racing cars were becoming disfigured and badly dented by coming in forcible contact with the block heads of those pedestrians. Finally in a heated meeting they petitioned the executive of Utopia for relief.

"Why not build a series of subways and force those pedestrians to use them for their traffic?" they said. "Of course, they may complain at first of the absence of sunlight, but it is far better to be buried alive than to be buried disfigured and dead."

Immediately the people saw the common sense of this view and, with sincere expressions of gratitude, built themselves subways and left forever the dangerous streets.

It was shortly before this needed reform, however, that Harold Hotstuff attracted much attention by driving his new 500 H. P. runabout at full speed through the streets. The carnage that marked his path everywhere turned the streets into a shambles.

At first wiser heads endeavored to make him moderate his enthusiasm, but he retorted, not without reason, that the cool current of air caused by the swift passage of his car was hygienic and invigorating. At last those wise men formulated a scheme to curb Hotstuff's rapid career.

"Mr. Hotstuff," they said finally, "we have decided to offer you the presidency of our Dontquitable Life Insurance Company, and also present to you a large block of the stock. Will you accept?"

"Certainly," said the scorcherino.

The next day when the new president D. L. I. Co. started to speed his 500 H. P. Pink Phantom, he murmured bitterly, "Stang!" In very sooth, it would be an extravagant man who would run down pedestrians when he reflected that they might hold life insurance policies in his company.

Fines and Finals

CHAPTER I.

"Hello, old man! How's automobiling?"

"Fine!"

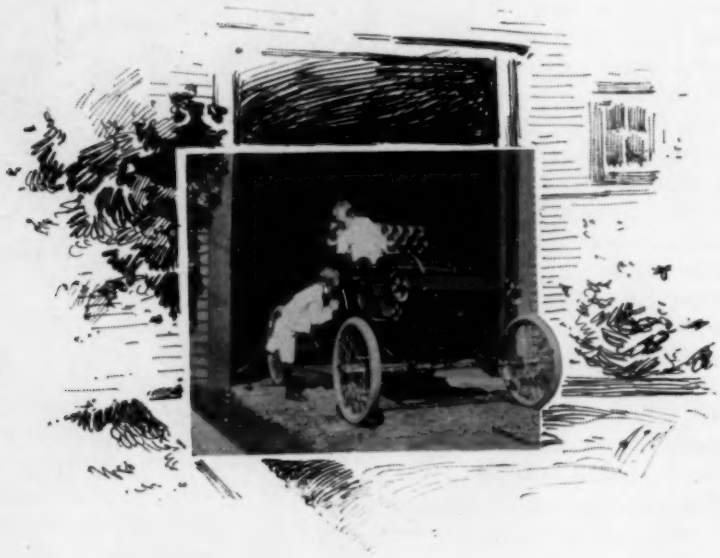
CHAPTER II.

(Time, one month later.)

"Hello, old man! What's the matter with automobiling?"

"Fines!"

(Finis.)



Running Into Things

By Perry R. Morton

"THERE is only one thing that will worry me much when driving a car," said a professional, relating some experiences, "and that is, when going full speed along a road to find a sharp turn right ahead, with a hill just beyond that, and a wagon at the foot of the hill. That's about the most ticklish situation the ordinary driver can find himself in. Road driving as well as race driving requires constant care and vigilance. A nervous person on the front seat alongside of you is one of the things I most cordially hate, particularly if the front seater is of the kind that grabs at your steering wheel or exclaims 'Oh, there's something in front! Stop!'

Many people are nervous the first time they go out in a fast-moving car, but most of them get over it and become able to sit coolly in the car without feeling a constant desire to grip the seat. Bicyclists worry a chauffeur a whole lot, women bicyclists especially. They wabble first to one side of the road, then to the other, and the car driver never can tell which side they are finally going to take.

Children in the road are a constant demand on the coolness and skill of the driver. They may run out in front of you suddenly, and they may stop and hesitate and keep you guessing as to what they are going to do. I've met hundreds of them at different times, and never have struck one. I always make it an invariable rule to get the car behind a child—never try to head it off. Once I encountered a man suddenly in a road, and he did the jumping act. He was rattled, and couldn't make up his mind which way to go. While he was bobbing about I brought the car to a dead stop. 'Now,' I said to him, 'which side of the road do you intend to claim? Just take your time and come to a decision.' He laughed in a foolish sort of way, stepped aside, and I went on.

The fact is, you can do more to the square inch with an automobile than with any other machine in the world. Why, I've had the forward gear of my machine broken, and had to go backward all day. Yet there are drivers who can't back their machines. It took me at least three years to become expert at going both ways. You know

in going forward you turn your steering wheel to the left to go to the left, while in going backward you turn the steering wheel just opposite to the direction you want to go and this naturally is confusing the first time you try it. It's easy to drive when you know just where your front wheels are go-

ing, but to know that you must be a good judge of distance and pace.

I'm not fond of night driving. You encounter too many deceptions at night; that is, distances are deceptive, and you imagine you see objects suddenly looming up ahead of you, when there isn't anything there. I prefer to drive without goggles, too, for you can judge things more accurately; and I've never felt any strain on the eyes from driving this way yet.

Driving through the downtown business district of New York city is calculated to give a chauffeur gray hair. Where the trucks are and the shipping districts are the worst. The truckmen are pugnacious, and if they're in the mood you'll find a pole in the way. I've had to back up a whole block to find a clear passage. Once coming down Broadway I was chased by a runaway seven blocks. The horse was within fifty feet of me several times, and I was devoutly thankful when I finally managed to turn into a side street and let the runaway have all Broadway.

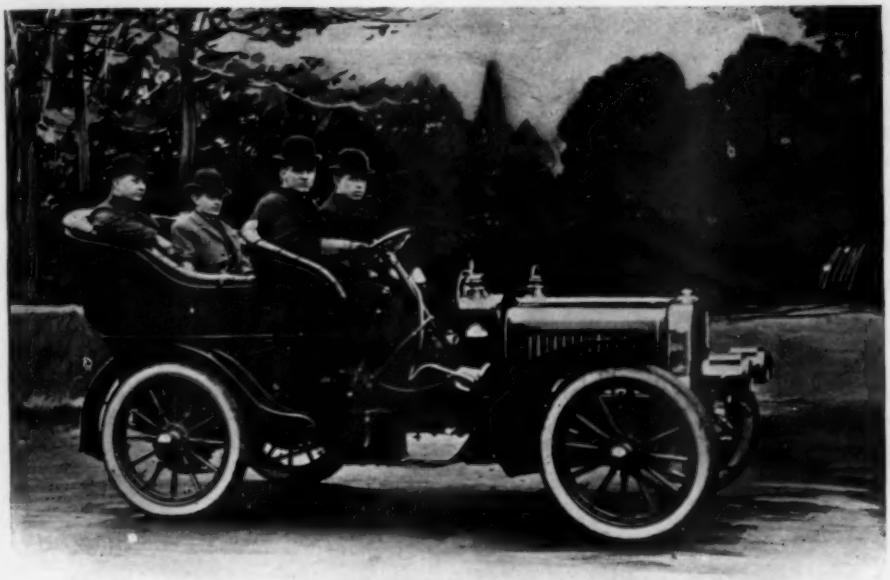
One of the oddest experiences I ever had was near Paterson. I was driving a 16 H. P. car, and going pretty fast, when a Newfoundland pup darted out into the road ahead of me. I suppose if it had been an old dog it would have had sense enough to have kept out of the way, but this pup evidently had no sense at all. When the radiator struck him, he rolled under the car and I bowled along over him. I looked back expecting to see a mangled dog, but the pup jumped up, unhurt, but scared, and ran away yelping. When I had gone about five miles further my car stopped. An examination showed a leak from a broken radiator.

I ran into a pigeon once. The pigeon arose in front of me and tried to fly across the road. The car was going too fast for the bird, and the only thing left of the pigeon was a feather on the front of the car.

I should say that it takes three or four years' experience to learn to drive any make of car, anywhere, at any time. If it's a strange car you've got to feel it out. I've driven as many as fifty different makes in my time, and have driven some that I didn't know the make of. The American made car of to-day is much easier to handle in proportion to its power than it was two years ago.

Horses are less troublesome now than they were. They were pretty bad at first. You can do more with an automobile than you can with a horse. It is more trustworthy. But this thing of averaging forty or fifty miles an hour at road driving is all in your eye. If you can average twenty-five miles an hour you are doing well. As to automobiles and the railroad, my belief is that an automobile with a good driver is safer than the railroad train, but not as trustworthy for speed. The automobile can get out of the way, where the railroad train cannot. Going at twenty miles an hour I can so control my machine as to go within an inch of a stump at the side of the road and not touch it.

In the way of amusing experiences, I remember one I had in a country town in Pennsylvania. A friend and myself were riding through the main street of the town and, having had a long journey were headed for the nearest thirst parlor seeking replenishment of our fuel tanks. Hitched to a post at the side of the road was an old gray horse attached to a farm wagon. The horse didn't look as if an earthquake, a volcano and a cloudburst combined would disturb him. But as the automobile neared him he gave a sudden jump, the front wheels of the wagon came loose from the body and the old gray horse



G. H. Dingley, Driver, and J. T. Tattersall, of Col. C T. Muir's Pope-Toledo Entry for the Gordon Bennett Race, on Front Seats; and Herbert Lyttle, Driver, and Wm. Knipper, of Col. Albert A. Pope's Entry for same make of Car and same Race in Tonneau

went charging up the road, taking part of the wagon with him.

"We're in for it now, sure," I said. "We'll have to pay for that wagon, but we've got to get our drink, no matter what happens."

We drove up to the dispensary, where drinks were to be had and awaited developments. In a few moments the farmer came back leading his old gray horse and such part of the wagon as had not been left behind.

It was an angry farmer that we expected to confront, but he paid no attention to us at all. He led his horse right up to the automobile, pushed his nose against it and chided the animal thus: "Now, you darned old fool, take a look at it. You're the oldest horse in this country and yer ain't got any more sense than to get scared at one of them things."

What we bought in the way of Oil of Joy for that old hayseed it would have taken a gallon can to hold, but the farmer's tank capacity seemed all sufficient, though I will admit that when eventually he jogged off down the road behind that same old gray horse he knew a blamed sight less than the animal, even admitting that the latter knew nothing at all.

Some Sparking Points

Ignition for explosive motors is a very delicate matter, and the good running of the engine depends on it to a very great extent; yet too often manufacturers of sparking apparatus undertake the construction of induction coils without sufficiently understanding the requirements the coils must meet.

Simple as the construction of an induction coil may seem, there are numerous difficulties to surmount. It is easy to say that one takes a bundle of iron wires and then winds round it a thick copper wire with a secondary winding

of finer wire over that, and adds a condenser and the most rapid trembler possible; but to succeed in making an irreproachable coil in every way suitable to the needs of the motor without producing any sparking at the platinum contact points, you must combine the iron wire core, primary winding, secondary winding; and condenser in their proper relationship, which is based on very complicated calculations as to the varying time of making contacts. Any one who conscientiously tries to find out the principles of a coil would find it easier to make calculations for a continuous or alternating dynamo than for a simple sparking coil.

What trouble people must have had with some coils, for the reason that an agent sold them coils from a catalogue which coils were in no way fitted for the particular motor on which they were to be employed. For each motor it is necessary to have a coil with definite characteristics, dependent on the construction of the cylinder, power of the motor, number of revolutions, sparking plug employed, and the type of commutator.

Another interesting question is the power of the spark. Entirely too many people are of the opinoin that provided that the coil produces a small spark, that is sufficient. People possessed of this opinion have obviously not reflected on the matter. The strength of the spark you get form the coil depends upon the cubic capacity of and the pressure in the cylinder. With a coil giving a small spark, you may get good results in small cylinders and less satisfactory results in big cylinders—that is to say, an efficiency which will not be the maximum. The object in producing a spark is to fire an explosive mixture in the shortest time, so as to get the maximum combustion and the most rapid propagation of the flame. To get this you must proportion the spark to the size of the cylinder, for if we compare the spark with a sphere we see that the surface of the spark which produces the firing varies according to the cube of the radius, so that if we increase the spark we vary largely the propagation of the flame, which is proportional to the initial firing surface.

At the same time, you must not always be satisfied with having an extra rapid trembler; you must use one suitable for the maximum speed of the motor. With the same expenditure of current a rapid trembler produces smaller sparks in the secondary than low-speed tremblers do; therefore you get a less desirable effect. To use a trembler suitable for a motor running at 1,800 revolutions on a motor running at 1,000 to 1,200 makes a very poor combination.

OF all the men in the world the farmer is the wisest, the most patriotic, the most progressive, and the most energetic. He is the broadest minded, the most abused and the last to be thought of by legislators and a paternal government. Verily the farmer is all this and a lot more—that is, if you let the farmer or the vote-chasing legislator tell you. Actually the farmer is a very much overrated and over pampered, narrow-minded, shiftless, whining, begging individual, who seeks from the government everything and gives in return naught but cries for more and complaints of ill treatment. Had the world depended upon farmers for its progress and its enlightenment we'd all be going to bed to-day at sunset because our only illuminant, tallow candles, would be too expensive for us to waste by burning them solely because we wanted light enough to look at each other's dull and stupid countenances. Providence even cannot win approval from the farmer. When it rains your true farmer complains that his crops are being drowned; when the sun shines the crops are being burned. Wet or dry, rain or shine, it is all alike to the farmer; it is wrong. Despite all this you constantly hear our legislators and other professional Solomons holding forth upon the necessity of "doing something for the farmer," apparently taking it for granted that the farmer is incapable of doing anything for himself except groan, grumble and grab. No matter what improvement you may propose, you can always rely upon the farmer opposing it. Innovations which have won the farmer's support have never progressed past some new pattern in gold bricks or an innovation in the good old hanky-panky game of the three little shells and the illusive pea.

Being what he is, where he is, and why he is, the farmer naturally welcomed anything like the automobile just about as effusively as a coal salesman would be welcomed in Sheol. Incapable from the very nature of things of seeing beyond his elongated nose, the

farmer promptly declared himself first, last and all the time against any conveyance, the fuel and the engine for which he the farmer did not supply. The result of all this has been that the vote hunters in our legislatures and out of them have banged the automobile every time they have got a chance only to be met with further demands from the back counties to "hit 'em agin, begosh!" But even legislatures, strange as it may seem to most people, can only go so far on the road to utter imbecility before they run up against at least a temporary check in the shape of a Supreme court or something equally as sane and powerful, and so even the legislatures, anxious as they are to do all they can for that noble and progressive body of our citizens, the farmers, have in almost every state almost reached their limits. But does this deter the farmer? Not much! Has he not an unbroken record since "Adam delved and Eve span" of being a darn fool to live up to, and do you think he is going to lose it now? Again, not much. So over in New Jersey we see him in a conclave assembled pledging himself and his kind not to vote for any man no matter how excellent his qualifications for office may be if the candidate owns an automobile. Understand the farmer well in this matter. Two men are nominated, one is an upright, honest, capable and progressive man who because he is progressive owns an automobile; his opponent is a crooked, beetlebrowed, red nosed, grafter whose record has been such as to warrant his residence being one provided for him at the expense of the state. Now under the resolution unanimously adopted by the New Jersey Farmers' Club its members must vote for the grafter or for anyone no matter how unfit so long as he possesses the one all-qualifying virtue of not owning an automobile. Was ever a better picture drawn of the farmer than this one he has sketched of himself and for himself?

REFERENCE to the farmer above and to the many grievances he has against God and man recalls to my mind yet another grievance these wise men of New Jersey have against the automobile. It is averred by the gentle granger that the strawberry crop is doomed because the swift passing automobile stirs up the dust, which dust, with the usual perversity of all things animate and inanimate where the farmer is concerned, absolutely refuses to settle on anything but a strawberry; the result is a dust covered berry and an aggrieved agriculturist. I know there must be some truth in this allegement, because the fruit gardener's city stepbrother, the roof gardener, is putting up an awful howl, claiming that the automobile has ruined his usual profitable crop of strawberry (blondes). Certainly the glamor and the glory of the roof garden really do seem to have vanished, and I believe that no small credit for directing the interests of the New Yorkers, strawberry ones and otherwise, is due to the vogue of the automobile. The purchasers of boxes in former years now prefer to spend the summer evenings in a motor car. Consequently there have come into existence many havens of delight for those who want to travel for their summer night's pleasure far away from the city. Among these the most attractive, probably, to the greater public that supported the roof gardens in the past is Coney Island. The automobile and Coney Island have, between them, nearly killed the roof garden, but true to the former instinct in him the roof garden prefers to blame it all on the automobile.

Even the most incorrigible scorcher would rather be last than first—in a funeral procession.

THE number of arrests for violations of the speed laws shows that the automobile's period of hibernation and that of the notoriety seeking officer are both quite over, and that the self-propelled vehicle has entered upon another summer of joyous activity for both chased and chasee. Like "swift Camilla" of poesy, the car of the scorcher "scours the plain" and clears its own path of all obstacles. The cycle policeman chuckles as he rises in the morning, regulates his eighteen-miles-an-hour Waterbury, and looks forward to a day of sprinting followed by due notice in the papers of how he overtook a scorcher going thirty miles an hour, when to ride a mile in four minutes would mean a funeral in the officer's family, with him playing the important role of cold meat in the first wagon. The magistrate gets out his stock of assorted scoldings and his private collection of hard names and prepares to applaud the policeman and excoriate the automobilist with admirable impartiality.

It is at this point that, without a desire to criticize any court, however minor, I venture to suggest that mild words and a moderate manner are more consistent with the dignity of unbending justice than sweeping assertions and encrimsoned cheeks. It is neither magisterial nor true to exclaim petulantly to the arraigned automobilist as is the wont with more than one New York magistrate: "You don't stop for any one. If people don't get out of your way, you run over them."

Some drivers, too many of them if you will, have little or no respect for the speed laws. That is indisputable. But unless cold fact, bloodless and inexorable determination of the measure of culpability under the law, and a relentless application of the punishment to the transgression without disgression into side issues confront them at the bar of every tribunal, they never will gain respect for laws or courts. It is not true that even the most confirmed scorcher's song is:

"Listen to the ambulance coming down the street;
When we took his head off, didn't we do it neat?"

The scorcher takes chances, and he takes them recklessly; but he does not actually desire to maim or kill people. Any person walking the streets of any city can see automobile drivers pull up short every day in eager endeavor to avoid running down human beings, and he can also see a great amount of contributory negligence on the part of pedestrians. Even a scorcher should not be accused of doing what he does not do. He should not be scolded or shouted at by an angry man simply because through some utterly incomprehensible accident the shouter has been placed on the bench in place of behind the bars. The reckless driver should be pitilessly and icily accused of doing just precisely that which he does; he should be held to that and fined for that to the full limit. If the price of breaking speed laws in this state is not high enough, then it ought to be raised, but abuse from the bench no more than persecution by the police will bring about either observance or respect for the law.

BY just what warrant of law the authorities of Ardsley, N. Y., stretch ropes across the State road to stop automobiles, or by what parallel right Connecticut constables block the highways with ladders to facilitate ar-

rests, is not clear. With automobile drivers who forfeit respect by their defiance of local ordinances there can be no sympathy. But it is a mistaken zeal which, in the effort to apprehend the occasional culprit, nullifies the rights of the road belonging to automobilists generally in equal measure with the owners of other vehicles. The use of unlawful means for upholding the law is in no way excused by the justice of the end sought, not even when directed against that large and influential body of citizens who are considered beyond the pale of all law simply because they have the good fortune to own a vehicle which has not yet won the commendation of the hayseed, the truck driver, the grafter or the dogberry.

LOOKED at from the viewpoint of the outsider it would seem as though the owners of the great speed machines would experience great difficulty in obtaining the services of skilled mechanics to ride with them or for them in the cars, since men competent for such duties would have no difficulty in obtaining remunerative employment at less dangerous tasks. The risk involved in motor racing is one of the reasons for its great popularity among venturesome men. Were there no danger to the occupants of the cars there would be little sport in the experience. France, where there have been more fatalities due to this the newest form of racing than in any other country, has not found that the deaths and injuries caused by collisions, overturning of cars and smashups have resulted in checking enthusiasm among either owners or drivers of racing cars.

Riding to hounds, steeplechasing, football and many other outdoor sports cannot be pursued without danger; but this does not act in any way as a deterrent to those interested in them. Great as is the satisfaction felt by the winning contestants over their success in the field, the desire for pre-eminence is not the only cause that leads men to engage in dangerous pastimes. The spirit of adventure, the love of excitement for its own sake, the instinctive rebellion of many minds against the humdrum, commonplace existence of most of us moderns, operate to make danger and risk attractive.

Automobile racing has been denounced by ultra purists as being "tainted with commercialism," because the manufacturers have seen in racing legitimate opportunities to advertise their cars. If it is ever proved that the race meetings are not purely sporting events, but mere annexes of the advertising departments of the makers, they will suffer a great setback in popular interest among all classes, but so long as the dangers of such contests to drivers and spectators are the only arguments against them, they are likely to continue and to grow in popular favor.

Around about this time of the year the crack racing chauffeur begins exhibiting unmistakable symptoms of I-am-itness.

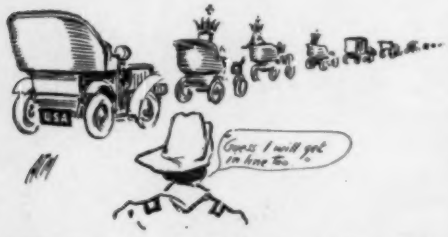
SO John D. Rockefeller has at last become converted to the automobile, eh! Well, I'm glad of that, because it is but natural to suppose that his eleventh hour conversion will be followed by the prompt removal from the gateways and driveways of his estate near Sleepy Hollow of the signs threatening the driver of any automobile who dared to pass through the gates or over the roads with arrest for trespass and I don't know what else besides. Unless,

perhaps, it might be Mr. Vanderbilt in his famous Biltmore estate in North Carolina, no other man in this country can enjoy his automobiling as comfortably and as privately as Mr. Rockefeller can. The $5,000,000 or so that John D. Rockefeller has already expended in purchasing and improving Westchester county property, sometimes buying up small villages, if necessary, to further his plans, has been invested with the idea of creating a suburban home that would compare with the great landed estates in England. Beginning with 500 acres in 1894, Mr. Rockefeller has gradually increased his Pocantico hills property to nearly 6,000 acres. In his new automobile Mr. Rockefeller can ride seventy-five miles over his own property without going over the same road twice. The stables, where the new automobile rooms will be located, are nearly completed. They cost about $300,000, and are the finest private stables in this country, not excepting those on the big estate of James B. Duke, the tobacco king, at Somerville, N. J. Take the tall clock tower from Mr. Duke's fine stables, and the stables themselves might be stowed away in the basement of the new stables of the oil king on his Pocantico property, and still leave room there for an extra automobile or two How much gasolene his car consumes will never be one of the things which will keep Mr. Rockefeller awake at night worrying about.

WHEN in the course of human events an unfortunate becomes entangled in the all-bewildering red tape of German laws, the end no man knoweth, but all men dread. I ran across an excellent example of this in a German law journal recently and I cannot refrain from telling it here. It appears that a certain learned professor sent his car one day by train, but before he placed the car on the train he forgot to empty the gasolene tank. According to the by-laws of the company any gasolene sent by rail undeclared is subject to a heavy charge, based upon the weight of the gasolene and of the vessel containing it. The railway company, therefore, sent in a bill to the professor amounting in all to near $5,500, as they declared with true German brilliancy of logic that the vessel containing the gasolene was the entire car and not the tank alone. The General Board of the Bavarian State Railways have now consented to allow the charge to be reduced to $75, though, at the same time, they state that they considered the greater charge justifiable from a legal point of view. The professor will probably be more careful next time.

ALREADY those far jumping gentlemen who are always prepared to meet a conclusion considerably more than half way have begun proclaiming the arrival of the final type of motor vehicle. But the truth is we are a long way, a very long way, from even being in sight of the perfect vehicle. To those who think themselves Alexanders of automobiling and who cry for new worlds to conquer because in their ignorance they see nothing left for them to improve upon in the present state of motor vehicleism, I might in all humility suggest that there are yet a few minor details which they might attend to when they find time from their present arduous labors of straining their mental eyesight by looking so intently into the far off future. For example

there is the problem of the two-cycle engine, and an infinitely variable gear with or without cog wheels, both of them entrancing puzzles to the mechanically-minded, and neither of them even approaching final settlement. Then, why also should not the waste heat now dissipated by the radiator be used for some form of power? Perhaps in the form of allowing the water to actually boil in the cylinder-heads and using the steam thus generated to drive an ordinary double acting one-cylinder steam engine acting on the same crank-shaft. The steam after it had done its work to then be conveyed through the radiator as the water is now. Thus there need be very little loss of water, certainly not more than there is in the present best systems used in steam car practice. The possibility of compounding explosive engines might also merit some attention from these finality shouters, as might also some form of rotary engine which could be used with the same power. But ideas like these are unending, and one is only tempted to ask if the progress of the internal combustion engine has been so great during the last seven years, what will it be in the next ten? Will not the cars we think so up to date and so difficult to improve upon to-day look almost as ridiculous in 1915 as the cars of 1897 appear to us now?



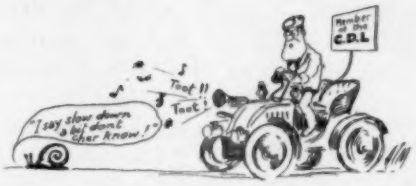
IN all of this flub-dub about the peace between Russia and Japan being pulled off by the President, I don't think the world at large has properly appreciated what a momentous thing that recent ride of his in an automobile really was. No man ever loved a horse more than Theodore Roosevelt, none perhaps thought less favorably of an automobile than he, so when forgetting all this the President, following the laudable example of his eldest daughter, he permitted himself to be taken for a ride in a conveyance the horse power of which was of a gasolene, not a geegee variety, I'll tell you that meant the beginning of strenuous times for a lot of people.

Mr. Roosevelt's fondness for the horse is natural. He is a man who has been accustomed to plenty of exercise all his life. The ordinary business of his station is enormous, and grows greater every day. It is difficult for him to find enough time to keep himself in perfect physical trim. Horseback riding is the most available form of recreation in his case. Out West they always think of him as the daring rider. Indeed, in the neighborhood of the Grand Cañon of the Colorado, on the occasion of his famous visit a few years ago, he turned many life-long Democrats into ardent supporters by making a trip on a horse in record-breaking time. Official visitors to Washington have had occasion to regret that they accepted the invitation of the master of the White House to accompany him on a cross-country ride.

He will find the automobile useful when he executes one of his strategic moves for the purpose of giving the Secret Service men the slip. Like most prominent men who are closely guarded, he finds the constant presence of his protectors irksome. It is said that he takes almost as much delight as a schoolboy who is disobeying orders when he succeeds in getting away from the Executive Mansion unattended, and the discovery that he has departed by the back door is the signal for immediate and almost panic-stricken hustling

on the part of those responsible for his safety to find him. All must pity the unfortunate Secret Service men on bicycles who will have to make the effort to keep close to the particular high power car you may be sure the President will use when he has once got clear of the precincts of the capital and is safely in Maryland. No doubt his official friends would like to impress upon him the necessity of setting a good example to the other users of the automobile in the nation in the matter of a speed limit; but what makes Theodore Roosevelt the most popular man that ever sat in the Presidential chair is because he is so human, and when it comes to being responsible for the speed of an automobile everyone who has ever tried it knows it is human to whir, the faster the more human.

But seriously, why shouldn't the President use a motor car? The automobile is in use in high official life everywhere. It is said that one is to be substituted for the carriages in which the Pope drives about the Vatican gardens. Even at the conservative Court of Madrid the horses in the royal stables are kept idle most of the time. King Edward and President Loubet both use this convenient means of getting about except on very State occasions. Most of the heads of States of Europe are ardent patrons of the sport. It is also a curious fact that whereas nobody has ever heard of the coachman of a high potentate being arrested for furious driving, yet the chauffeurs of the Prime Minister of England, the King of Spain and other dignitaries have been arrested and fined by local authorities because they failed to be careful about the safety of humble persons in the street. The automobile is a great leveler. You can take this statement from the motorphilic or motorphobic point of view as best agrees with your ideas for or against the car.



IT is an old story that of the inadvisability of bestowing a bad name upon a dog, and it is no less true that many an otherwise meritorious object has been eternally damned solely because its sponsors burdened it with a name which forever shut it out from the salvation which results from public favor. I had some such thoughts as these when in an English contemporary I first read of the "Considerate Driving League." There was something so pedantic about this title that I was inclined to pass the whole thing by with no other thought than that it was but another example of those British organizations, of which there are a million or more started every year for the correcting of some real or imaginary evil. But when I came to read the dozen simple maxims which constitute all there is to the C. D. L. it dawned upon me that in these were to be found the settlement of the entire question of how to be an automobilist, and still not to be an anathema to every other user of the highway. I became at once an admirer of the C. D. L., while at the same time I regretted that every owner of an automobile was not prepared to live up to its very simple requirements and thus win over to the motor car the legion which is now its enemies. Here are the C. D. L.'s definition of what it considers considerate driving to be:

Drive slowly: Through towns and villages. When approaching cross roads, or turning corners. When passing schools, cottages, and churches. On dusty or muddy roads when passing cyclists or pedestrians. When entering

a main road from a side road. When you see a drunken man on the road. When passing any live animals on the road, cows, sheep, dogs, etc.

Stop: When an accident of any kind occurs, whether your fault or not. Render all the assistance in your power, and, as a safeguard against future proceedings, ascertain the names and addresses of a few witnesses. When you see any likelihood of a horse becoming restive. If necessary, do this even before the driver holds up a warning hand.

Always assume: That other road users may do the wrong thing, i. e., a driver may pull the wrong rein, or a pedestrian hesitate and try several courses. That it is your business, not the other man's, to avoid danger.

The road is free for all; therefore be courteous and considerate, and always drive like a gentleman.

"JERSEY justice" we are all familiar with; Jersey injustice allied to Jersey graft we are being rapidly forced to become acquainted with and we don't like it, though this makes no difference whatever to the gentlemen at Trenton who are robbers very very poorly disguised as legislators. Naturally such a couple of good things as the automobile and its owner had no chance in the world to get away from the Trenton aggregation, and while the automobilist has caught it good and plenty in the past the grafters were not content to let anything so soft escape without getting all he had, hence the new law requires that the car carry two numbers —that is to catch the good thing both coming and going—and these numbers must be at least four inches high. Now to thoroughly understand how systematic the New Jersey grafters are in their working of the automobile good thing I am going to call your attention to something I wrote on these pages in last November wherein I said:

I wonder if the Secretary of State over in New Jersey knows just how closely his office, if not himself, is associated in the minds of automobilists with a back number. Perhaps he is an innocent man who is being taken advantage of in some way; if he is this will open his eyes. Dogs and automobilists have to be registered in New Jersey. If you are of the two-legged rather than the four-legged persuasion, you have to wear your license behind rather than around your neck, otherwise the *modus operandi* of being separated from your coin is the same with both man and beast. In the case of the man, however, there seems to be an exception, for no sooner does he apply for an automobile license than from some mysterious source a Trenton dealer in license tags, who seems to learn of the application at once, immediately sends him a very elaborate circular offering him his wares. If you look closely at the handwriting upon your license certificate and that employed in addressing the tag dealer's circular, you will notice more than a similarity. It is a "fine" game, but I wonder if the Secretary of the State of New Jersey is really standing in on it or if he is only getting stood up for it without knowing that he's standing.

This is how the game was played in November; to-day it is different. Finding that the graft was both good and easy the personal profit politicians

thought the annual influx of new license seekers did not afford enough of a divvy and so they proceeded to amend the law in a fashion which would make the graft simply grand. Under the new law the car must carry two numbers and the size of these is distinctly stated as not being permitted if less than four inches in height. The result of this is that not less than 30,000 new numbers will be needed by automobilists in New Jersey. This will call for an expenditure on the part of the purchasers of more than $50,000 this year. When you stop to consider the close personal and apparently business relations existing between the favored Trenton number supplier and the New Jersey Secretary of State's office it is not at all difficult to figure out that a neat little sum of not less than $30,000 will be split up between somebody and somebody in Trenton, N. J. Really, considering its apparent insignificance I do not know of a more juicy bit of grafting than this double number game as played in New Jersey by the politicians and their side partner, the tag purveyor.

AFTER years of dodging the automobile, as a risk, not as an actuality, the insurance people seem to have plucked up enough courage to make use of a small amount of common sense and to conclude as a result that the coming of the automobile does not necessarily mean the going of everything else in the world. Falteringly the insurance people admit that may be they can place insurance upon automobiles, their owners, drivers and garages without the companies going broke or the insurance business ceasing to exist. The consequence of this change of thought and glimmer of common sense on the part of the insurance people is that they are becoming afflicted with that all contagious complaint motoritis, the pathology of which is an overpowering belief on the part of the victim that because a man owns an automobile he is made of money and lies awake at night praying for people to come and take it away from him. So rapid has been the spread of motoritis among insurance people that you can to-day get insurance against almost every contingency resulting from owning or driving an automobile. Not only can the vehicle itself be insured against fire and other injury, but the owner is secured against damage suits caused through the actions of his car, civil suits are defended for him and all penalties except actual imprisonment assumed by the assurers. If a lamp or other part of the outfit is stolen it is replaced by the company, and if the driver is taken ill or injured in an accident he gets a weekly allowance, with a substantial sum for his heirs if death ensues. If there is any contingency uncovered the companies would like to know of it, as they do not wish to be left behind in the mad chase after best of all good things, the automobilist, in which chase everything and everybody from the grafting legislator to the grasping editor is indulging.

NOT long ago I took occasion on these pages to call attention to the utter impossibility of the Anglo-Saxon mind ever understanding what the Gallic exponent is wont to designate as "le sport." In my little jibe at the Frenchman and his peculiar ideas of what constituted sport, I very naturally made the inference plain that when you come right down to the marrow of the

whole thing the only people in all the world who really knew what constituted true sport were the British and the Americans. I believe I threw all of the complimentary bouquets at ourselves that the opportunity permitted, and then with the self-satisfied smirk of the confirmed we're-it I rested my case, knowing there could be no possible reply to my claims. Perhaps there may have been some who did me the honor to read these pages who thought I was unduly severe upon the French sportsman and over laudatory of the American one, but I am now in position to prove that compared to the American no Frenchman nor any other white, black or yellow man has any idea of what genuine sportsmanship is. Here's the proof. Under a date line of Bliss, Okla., the New York *Herald* prints the following special dispatch:

Chased by twenty-five cowboys and a band of Indians in full war paint, headed by old Geronimo, a buffalo was brought to bay on "101" Ranch to-day and shot to death by Dr. H. F. Thomas, a wealthy club member from Chicago. Dr. Thomas fired the shot from his automobile that had been in the chase, which lasted several hours.

Could any other human being than a real American "sport"ever have thought of putting a poor lone buffalo inside of a ring fence and then chasing him "several hours" with an automobile, "twenty five cowboys and a band of Indians in full war paint?" Well, I guess not. Again at the end of the "couple of hours'" chasing could any other human being but a real American "sport" be so sporty as to shoot the poor exhausted animal to death? Again, I reckon not. No indeed, you can say what you please, when it comes to being genuine "sports," we have in such examples as this Chicago individual the only real thing, and in the language of his fellow citizens we have "the rest of the bunch skinned to death." Verily, the automobile owes much to this brave Chicago "sport," for certainly in view of his chivalrous use of the vehicle it is no longer possible to question either American sportsmanship, humanity or bravery.

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WHEN you have once had the pleasure of hearing Simeon Ford dilate upon a subject you are not likely to ever forget either Mr. Ford or the aforementioned dilation. So when I saw in the papers recently that Mr. Ford had been arrested, or at least his driver had, for splitting the speed ordinance right up the back I knew then that automobiling had become a real not a theoretical affair with Mr. Ford. I well remember the days when Mr. Ford and the automobile were only on speaking terms, after dinner speaking terms at that. To be exact, at the annual dinner of the Automobile Club of America in 1903, I think it was, Mr. Ford thus theorized and embroidered the woof of fact with these silken threads of fancy and imagination:

"It is an interesting study, this evolution of the automobile. As the automobile has progressed, the occupation of the pedestrian has become a condition of delirium. The pedestrian, my friends, now moves about with frenzied leaps. Like the startled fawn, he leaps from crag to crag, hearing the hunter's horn. And it seems to me that this eternal horn blowing is unnecessary. In fact, I have always observed that the smaller the automobile the larger the noise. Ofttimes I am standing in the street watching my chance to cross, and see a little wash boiler affair bearing down upon me. From the noise I imagine a

great terror on wheels is approaching. I watch, and what appears is this: A very small affair, with a one horse power driver. I look up expecting to see Gabriel and his trump, and lo! it is only a two-spot. Sometimes I think every jackass runs an automobile. I run one myself. But when I run over a man I just mow him down in a genteel way. I don't frighten him to death before I kill him.

"Some achieve automobiles, and some have automobiles thrust upon them. I am of the latter. I live in a suburban town which had automobiliousness thrust upon it early. The first man that got one in my town left a trail of death and destruction behind him. We talked of tar and feathers, but alas! we are now all tarred with the same trick.

"I well remember my first experience with the first man in that town who had an automobile. He was a neighbor of mine. I used to start out for the railroad station in the morning, driving a horse. We would hear that ominous noise behind and then my horse would tremble, my coachman would tremble, I would breathe a prayer to heaven. Then the machine would pass and other things would happen. I always tried to be brave. After the thing had passed I would cheerfully pick myself out of the top of a neighboring tree, extricate my horse from a barb-wire fence, and go sadly on. I was always sure to overhaul the automobile a little way beyond. Recumbent on his back, I would find the owner of it and his hired man under the machine doing the anvil chorus on the engine. He would say to me:

" 'Old man, I guess you will have to take me to the station,' and I always did like a Christian and lent my horse to draw his machine home. Then he would say to me, reflectively, as we drove along: 'Ford, the automobile is the coming mode of locomotion; the horse must go.' 'Yes,' I replied, 'the horse must go. My horse got going this morning when you came along and only for a kind Providence and that barb-wire fence he would be going yet.'

"So I suffered and struggled and learned, trying first one kind of machine and then another. I think the gasolene machine appealed to me most strongly of all. They told me it was operated by a series of explosions. Ah, I said, that must be the machine for me. I have been hit by dynamite explosions, my hotel was blown up a few months ago, as you may all remember, and it seemed to me that was the machine I should try.. Well, I have tried several, and at last I think I have one that breaks the record. It will cover the least number of miles in the greatest number of hours of any machine in the world. My machine is a record breaker in other respects. The engine, for example, is so skilfully constructed that it will contrive to break down standing still on the barn floor."

I wonder what Mr. Ford thinks of the automobile to-day. Two years is a mighty long period in the rapid history making pace the motor vehicle is setting for itself.

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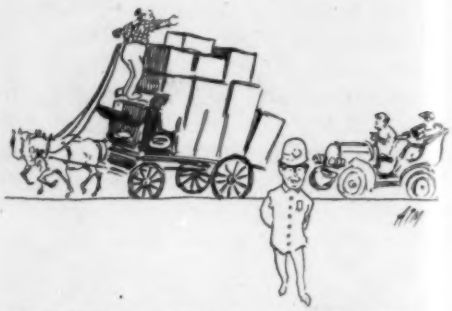
I NEVER could quite understand why the oiled road idea has not met with a greater practical success in this section than it has. A few years since we were all tremendously enthused over this perfectly feasible plan of making shifting, sandy and dirt roads compact and dustless thoroughfares. To-day we are no nearer having them here where

they are so badly needed than we were when we first heard of the oil treatment, and yet the problem of making excellent roads at a small cost has most certainly been solved by the road commissioners in Southern California by the application of crude oil. There are now several hundred miles of roads in that part of the state which have been treated in this manner; and there is no doubt that before another year many more will be under contract for a like treatment. And when a road has once been put in this condition it requires but a small sum to keep it so. The oil has been used upon various roads to test its effect upon various soils and varying conditions of the roads. It has been found that where the road has a hard, even foundation, smooth and clear of ruts, with about two inches of dust on the surface, it results in complete success and gives a surface as smooth and polished, as an asphalt street. Where the soil is clayey, though the surface is rutty, it will maintain the character of the ground, allay all dust and prevent further decay by resisting the formation of mud. On roads of deep sand, however, the oil appears to have little effect.

An excellent roadway for ordinary traffic may be obtained by the application of one hundred barrels of oil spread over an area eighteen feet in width. The oil is put on in three applications; the first at the rate of sixty barrels per mile, and the subsequent treatments at the rate of twenty barrels per mile. Now even at Standard oil prices this liquidized good road is a comparatively inexpensive thing and I'll be blessed if I can understand why we haven't any of it here in the East.

It's wonderful how easy it is for the driver who is a small man to swallow his anger when the other driver happens to be a heavyweight.



NEXT preceding the agriculturist in all that makes for progress is the kind hearted, public spirited citizen who for sheer love of his fellow man shrinkingly drives a truck through the streets of our cities. Here is a public character whose singleness of purpose, gentleness of disposition and kindliness towards his fellow man are all too well known and established for me to even make mention of them. Possessed of all these civic and other virtues it seems to me that in asserting and defending their "right" to use Fifth avenue for purposes of transportation of heavy merchandise on slow-moving vehicles, the members of the Truck Owners' Association may have inadvertently overlooked the to them unimportant fact that they are not the only citizens who have rights in the premises, and that it is proper to reserve certain streets for carriages if there are enough of these to fill them. The gentle and considerate truckman has the right to go slow and to rest his horses as much as may be needed. The haughty and disdainful owner of a pleasure vehicle has the right to go as fast as the law permits, and of this right he is wholly deprived if, in a crowded avenue, the average speed of movement is determined by the rate of progress possible for vehicles which cannot go faster than tired horses can be made by oaths and beating to walk and pull their loads.

THE OUTSIDER.

What the Man on the Road Sees

By "Flattop"

THE please-don't-press-the-button-until-I-am-in-front-of-the-camera habit has secured quite an aggressive following among a certain class who are seemingly using the automobile as a vehicle to convey them to and to keep them in the spot light of publicity. Of course, this peculiar weakness is a hareless one, though it does seem odd to all who are happily not similarly stricken to note how those chronically afflicted with the complaint spend time, money and considerable energy as well in chasing the camera. I can readily understand members of the theatrical profession contracting this disease, I can even sympathize with a charming woman's desire to not hide the light of her beauty under a bushel or any other measure, but I'll be blamed if it don't stump me to see full grown men so smitten with the desire to pose as to make their strenuous efforts to "get in the picture," a thing which borders close upon the ludicrous.

For yet these many years to come, perhaps, the New Yorker and his friends from everywhere will be permitted to attend his various "shows" within the walls of his well beloved Madison Square Garden. The rumor, for so the secretary of the Madison Square Garden Co. characterizes the announcement of the Garden's demolition, was without foundation, further than that Garden, like all other commercial properties, is for sale if a sufficiently high price is paid for it, but this the secretary of the Garden company assures me has not yet been done, and so we can go calmly on our way not worrying over the possibility of losing our much-prized Madison Square Garden, remembering that threatened buildings, no less than threatened men, live long.

Take my word for it, those gentlemen

The Business End of a Transcontinental Car

who think the sure and the cheap road over which to travel to success in the construction and sale of automobiles is the somewhat devious one upon which no sign board ever appears for fear of breaking the sacred tradition of "no publicity" are due to a rude awakening in the near future. The American Locomotive Co., sometimes characterized as the Locomotive Trust, has decided that if the automobile should prove to be a competitor of the railway in sparsely settled sections and for short hauls, it is the part of wisdom that the A. L. C. have a share in turning out these possible competitors for those who may want them. With characteristic business acumen this big corporation has not elected to trail along in the wake or abreast of the putterers. It has chosen a first-class French type of car, the Berliet, and will at once proceed to turn it out with American labor and material. Here is where the sleepers will get their rude awakening. The first thing they know the A. L. C. will have all the cars the public wants ready for the public that wants the cars. This will be brought about by taking every possible advantage of the A. L. C.'s splendid plants and mechanical facilities, backed up by an aggresive, wide open and wideawake publicity campaign. The A. L. C.'s plants will produce the cars, of that there is no doubt, and the public will produce the money for them, because the public's education as to the merits of the new Americanized Berliet is to be left in the very able hands of Ray D. Lillibridge, a better man than whom the automobile trade has never seen placed in charge of publicity promotion. Knowing Mr. Lillibridge's aggressiveness in an advertising campaign is what has caused me to make the prediction that the near awakening of a lot of automobile old fogies and non-progressives was very near at hand. To these gentlemen I would henceforth commend a close attention and constant remembrance of the sign which law compels all railroads to erect at road crossings and which reads "Look out for the Locomotive!"

Dr. Jervis and Ambulance in New York Motor Club's Orphan Parade

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Said a man who has sold more automobiles than any other man in New York to me recently: "If I could only get the kind of speedometer I want I wouldn't care what it cost. Furthermore I'd give bonds to sell every man in the trade one at the maker's own price." This seemed to me to be an important thing, so I was naturally very much interested to know just what kind of speed recorder the trade was so anxious for and yet the makers would not supply. "Well, I'll tell you what's needed in the business. I want a speedometer that will never show that my car was traveling in excess of eight miles an hour when I get pinched, and which at

GETTING THEIR PICTURES TAKEN

the same time never shows that I am going less than eighteen miles an hour on the second speed when I have an almost persuaded customer in the car watching what it will do. Get me a recorder like this and bring it around with the bill and I'll pay any old price you ask for it, see?" I saw, but I'll be doggoned if I don't think the kind gentleman wants too much for his money.

About the only chance many of us have to get close to godliness is the promise that has been made that cleanliness is next to it. Thus, while it is not given to all of us to attain piety, there are none who cannot at least become

LINED UP IN FRONT OF CITY HALL

The Only Woman Driver in the Orphans' Day Parade

clean. The only essential to this is something just a trifle closer than a mere bowing acquaintance with soap and water. All this is true enough of ourselves personally, but when it comes to applying the same identical principles to cleaning an automobile there occurs a hitch, since the promiscuous employment of soap and water to the fine finish of a car will as often as not result in its being irretrievably injured and even were this not the case the luster which adds so much to the appearance of a car, hence to the enjoyment of its use, would be lacking even though the soap and water had cleaned it. If you really want to take the scalp of dinginess from a car employ Modoc and you'll be a happy Indian in consequence. Here is a cleaner that really accomplishes wonders without labor, loss of time, or discomfort of any kind. I have seen an old dirt begrimed car given a dose of Modoc treatment and the result was more like a new coat of varnish than a cleansing and restoration of an old coat. The Henry Roeser Co., Chester, Pa., are responsible for this cheap—it is only a dollar a gallon—and wonderful aid to automobile good appearance, and I cannot imagine any garage, either a public or a private one, considering itself supplied with even the rudimentary equipments necessary to properly care for an automobile which has not prominently among those rudiments at least one gallon of Modoc. I'd have half a dozen gallons if the place was mine, because I'd never want to run short of anything so desirable.

I am indeed glad to see by the daily papers that some one has devised a magazine tack hammer, having a hollow handle filled with tacks, which are fed automatically to the head.

A really splendid idea that! Now to make a prompt recognition of it I think it would be an excellent plan for a few of those interested in the trade and the sport of automobiling to take up a penny subscription, purchase one of these automatic tackers and present it to the individual who supplies the readers of the New York *Herald* with misinformation about automobiles, American made automobiles particularly. Being so constituted by his birth and affiliations as to be utterly unable to see anything favorable to the American automobile, its users, makers or admirers, the *Herald's* misinformant has consistently and continuously knocked American automobiling to the very limit of his feeble powers. Imagining himself a real hammer swinger in the knocking game perhaps, the presentation of one of these automatic tack hammers may open his eyes a bit as to his real caliber as others see it. In any event the present would be both significant and appropriate to the discoverer and chief exploiter of the $400 automobile.